EasyPACK™ Modul mit TRENCHSTOP™ 5 H5 und CoolSiC™ Schottky Diode und PressFIT / NTC
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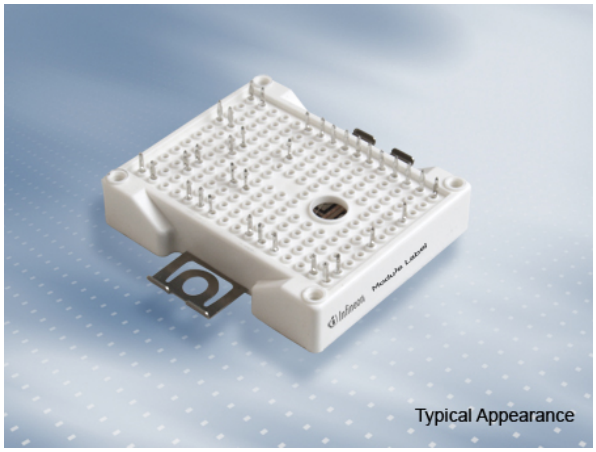
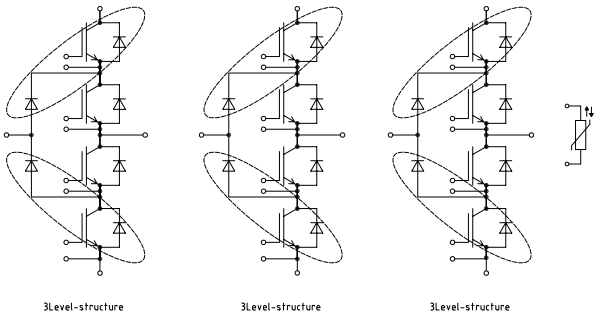




V_{CES} = 650V
$I_{C\ nom}$ = 40A / I_{CRM} = 80A

Potentielle Anwendungen
- 3-Level-Applikationen
- Motorantriebe
- Solar Anwendungen
- USV-Systeme

Potential Applications
- 3-level-applications
- Motor drives
- Solar applications
- UPS systems

Elektrische Eigenschaften
- CoolSiC™ Schottky Diode Gen 5
- Erhöhte Sperrspannungsfestigkeit auf 650V
- Niedrige Schaltverluste

Electrical Features
- CoolSiC™ Schottky diode gen 5
- Increased blocking voltage capability up to 650V
- Low switching losses

Mechanische Eigenschaften
- Al_2O_3 Substrat mit kleinem thermischen Widerstand
- Kompaktes Design
- PressFIT Verbindungstechnik
- Robuste Montage durch integrierte Befestigungsklammern

Mechanical Features
- Al_2O_3 substrate with low thermal resistance
- Compact design
- PressFIT contact technology
- Rugged mounting due to integrated mounting clamps

Module Label Code

Barcode Code 128

DMX - Code

Content of the Code	Digit
Module Serial Number	1 - 5
Module Material Number	6 - 11
Production Order Number	12 - 19
Datecode (Production Year)	20 - 21
Datecode (Production Week)	22 - 23

IGBT,Wechselrichter / IGBT,Inverter

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	650	V
Implementierter Kollektor-Strom Implemented collector current		I_{CN}	40	A
Kollektor-Dauergleichstrom Continuous DC collector current	T_H = 65°C, $T_{vj\,max}$ = 175°C	I_{CDC}	20	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	80	A
Gate-Emitter-Spitzenspannung Gate-emitter peak voltage		V_{GES}	+/-20	V

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage	I_C = 20 A, V_{GE} = 15 V I_C = 20 A, V_{GE} = 15 V I_C = 20 A, V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$V_{CE\,sat}$		1,40 1,46 1,50	1,81	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 0,35 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	3,25	4,00	4,75	V
Gateladung Gate charge	V_{GE} = -15 / 15 V, V_{CE} = 300 V		Q_G		0,165		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C		R_{Gint}		0,0		Ω
Eingangskapazität Input capacitance	f = 1000 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		2,00		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1000 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		0,008		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 650 V, V_{GE} = 0 V, T_{vj} = 25°C		I_{CES}			0,018	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			100	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Gon} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Gon} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Gon} = 7,5 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,on}$		0,019 0,02 0,02		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Gon} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Gon} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Gon} = 7,5 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_r		0,008 0,008 0,008		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Goff} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Goff} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Goff} = 7,5 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,off}$		0,09 0,11 0,11		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Goff} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Goff} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, V_{GE} = -15 / 15 V, R_{Goff} = 7,5 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_f		0,014 0,022 0,024		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 20 A, V_{CE} = 300 V, Lσ = 35 nH, di/dt = 1000 A/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Gon} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, Lσ = 35 nH, di/dt = 1000 A/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Gon} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, Lσ = 35 nH, di/dt = 1000 A/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Gon} = 7,5 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{on}		0,32 0,44 0,47		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 20 A, V_{CE} = 300 V, Lσ = 35 nH, du/dt = 5600 V/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Goff} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, Lσ = 35 nH, du/dt = 5600 V/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Goff} = 7,5 Ω I_C = 20 A, V_{CE} = 300 V, Lσ = 35 nH, du/dt = 5600 V/µs (T_{vj} = 150°C), V_{GE} = -15 / 15 V, R_{Goff} = 7,5 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{off}		0,10 0,15 0,16		mJ mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 360 V, V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	t_P ≤ 0 µs, T_{vj} = 150°C	I_{SC}		180		A
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro IGBT / per IGBT		R_{thJH}		2,12		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		150	°C

Diode, Wechselrichter / Diode, Inverter

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C		V_{RRM}	650	V
Implementierter Durchlassstrom Implemented forward current			I_{FN}	25	A
Dauergleichstrom Continuous DC forward current			I_F	20	A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms		I_{FRM}	50	A
Grenzlastintegral I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C V_R = 0 V, t_P = 10 ms, T_{vj} = 150°C		I²t	50,0 40,0	A²s A²s

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 20 A, V_{GE} = 0 V I_F = 20 A, V_{GE} = 0 V I_F = 20 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	V_F		1,65 1,55 1,50	2,15	V V V
Rückstromspitze Peak reverse recovery current	I_F = 20 A, - di_F/dt = 1000 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	I_{RM}		12,0 19,0 21,0		A A A
Sperrverzögerungsladung Recovered charge	I_F = 20 A, - di_F/dt = 1000 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	Q_r		1,25 1,76 1,99		µC µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 20 A, - di_F/dt = 1000 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{rec}		0,28 0,38 0,42		mJ mJ mJ
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro Diode / per diode		R_{thJH}		2,78		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		150	°C

IGBT,3-Level / IGBT,3-Level

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	650	V
Implementierter Kollektor-Strom Implemented collector current		I_{CN}	40	A
Kollektor-Dauergleichstrom Continuous DC collector current	T_H = 65°C, $T_{vj\,max}$ = 175°C	I_{CDC}	20	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	80	A
Gate-Emitter-Spitzenspannung Gate-emitter peak voltage		V_{GES}	+/-20	V

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage	I_C = 20 A, V_{GE} = 15 V I_C = 20 A, V_{GE} = 15 V I_C = 20 A, V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$V_{CE\,sat}$		1,40 1,46 1,50	1,81	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 0,35 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	3,25	4,00	4,75	V
Gateladung Gate charge	V_{GE} = -15 / 15 V, V_{CE} = 300 V		Q_G		0,165		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C		R_{Gint}		0,0		Ω
Eingangskapazität Input capacitance	f = 1000 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		2,00		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1000 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		0,008		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 650 V, V_{GE} = 0 V, T_{vj} = 25°C		I_{CES}			0,018	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			100	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 20 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Gon} = 3,9 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,on}$		0,012 0,014 0,014		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 20 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Gon} = 3,9 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_r		0,004 0,004 0,004		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 20 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Goff} = 3,9 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	$t_{d\,off}$		0,09 0,11 0,11		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 20 A, V_{CE} = 300 V V_{GE} = -15 / 15 V R_{Goff} = 3,9 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	t_f		0,014 0,022 0,024		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 20 A, V_{CE} = 300 V, Lσ = 35 nH di/dt = 4000 A/µs (T_{vj} = 150°C) V_{GE} = -15 / 15 V, R_{Gon} = 3,9 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{on}		0,13 0,16 0,17		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 20 A, V_{CE} = 300 V, Lσ = 35 nH du/dt = 5500 V/µs (T_{vj} = 150°C) V_{GE} = -15 / 15 V, R_{Goff} = 3,9 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{off}		0,10 0,15 0,16		mJ mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 360 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	t_P ≤ 0 µs, T_{vj} = 150°C	I_{SC}		180		A
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro IGBT / per IGBT		R_{thJH}		2,12		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		150	°C

Diode, 3-Level / Diode, 3-Level

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}		650	V
Dauergleichstrom Continuous DC forward current		I_F		20	A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms	I_{FRM}		40	A
Grenzlastintegral I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C V_R = 0 V, t_P = 10 ms, T_{vj} = 150°C	I²t		65,0 60,0	A²s A²s

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 20 A, V_{GE} = 0 V, T_{vj} = 25°C I_F = 20 A, V_{GE} = 0 V, T_{vj} = 125°C I_F = 20 A, V_{GE} = 0 V, T_{vj} = 150°C	V_F		1,45 1,60 1,65	1,85	V V V
Rückstromspitze Peak reverse recovery current	I_F = 20 A, - di_F/dt = 4000 A/µs (T_{vj}=150°C), T_{vj} = 25°C V_R = 300 V, T_{vj} = 125°C V_{GE} = 15 V, T_{vj} = 150°C	I_{RM}		26,0 23,0 22,0		A A A
Sperrverzögerungsladung Recovered charge	I_F = 20 A, - di_F/dt = 4000 A/µs (T_{vj}=150°C), T_{vj} = 25°C V_R = 300 V, T_{vj} = 125°C V_{GE} = 15 V, T_{vj} = 150°C	Q_r		0,29 0,29 0,29		µC µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 20 A, - di_F/dt = 4000 A/µs (T_{vj}=150°C), T_{vj} = 25°C V_R = 300 V, T_{vj} = 125°C V_{GE} = 15 V, T_{vj} = 150°C	E_{rec}		0,08 0,08 0,08		mJ mJ mJ
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro Diode / per diode	R_{thJH}		2,60		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions		$T_{vj\,op}$	-40		150	°C

NTC-Widerstand / NTC-Thermistor

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Nennwiderstand Rated resistance	T_{NTC} = 25°C	R_{25}		5,00		kΩ
Abweichung von R100 Deviation of R100	T_{NTC} = 100°C, R_{100} = 493 Ω	ΔR/R	-5		5	%
Verlustleistung Power dissipation	T_{NTC} = 25°C	P_{25}			20,0	mW
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298{,}15\ K))]$	$B_{25/50}$		3375		K
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/80}(1/T_2 - 1/(298{,}15\ K))]$	$B_{25/80}$		3411		K
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/100}(1/T_2 - 1/(298{,}15\ K))]$	$B_{25/100}$		3433		K

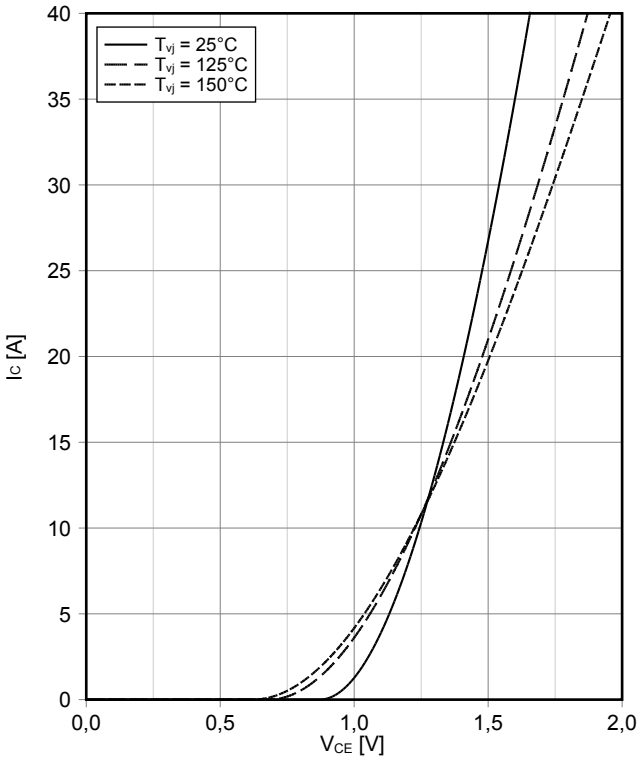
Angaben gemäß gültiger Application Note.
Specification according to the valid application note.

Modul / Module

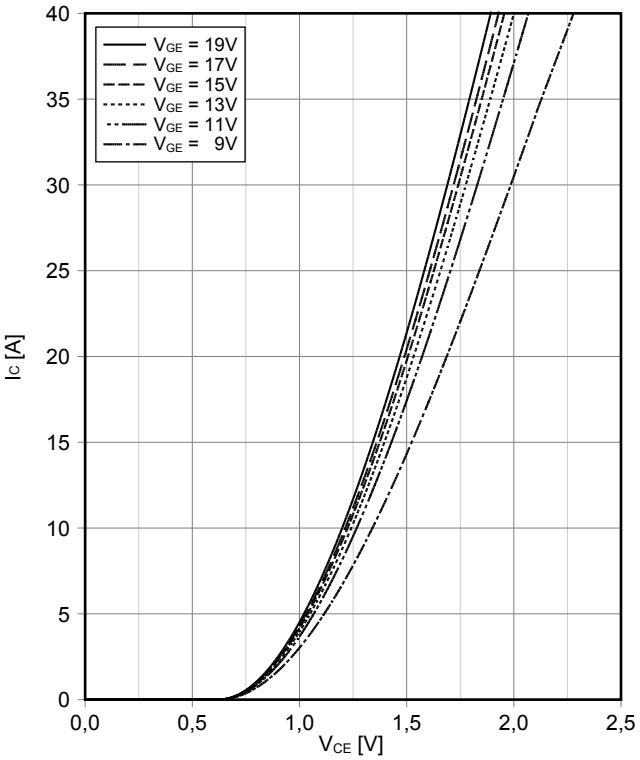
Isolations-Prüfspannung Isolation test voltage	RMS, f = 50 Hz, t = 1 min.	V_{ISOL}		2,5		kV
Innere Isolation Internal isolation	Basisisolierung (Schutzklasse 1, EN61140) basic insulation (class 1, IEC 61140)			Al_2O_3		
Kriechstrecke Creepage distance	Kontakt - Kühlkörper / terminal to heatsink Kontakt - Kontakt / terminal to terminal			11,5 6,3		mm
Luftstrecke Clearance	Kontakt - Kühlkörper / terminal to heatsink Kontakt - Kontakt / terminal to terminal			10,0 5,0		mm
Vergleichszahl der Kriechwegbildung Comperative tracking index		CTI		> 200		
Relativer Temperaturindex (elektr.) RTI Elec.	Gehäuse housing	RTI		140		°C
			min.	typ.	max.	
Modulstreuinduktivität Stray inductance module		L_{sCE}		45		nH
Lagertemperatur Storage temperature		T_{stg}	-40		125	°C
Anpresskraft für mech. Bef. pro Feder mountig force per clamp		F	40	-	80	N
Gewicht Weight		G		39		g

Der Strom im Dauerbetrieb ist auf 25A effektiv pro Anschlusspin begrenzt.
The current under continuous operation is limited to 25A rms per connector pin

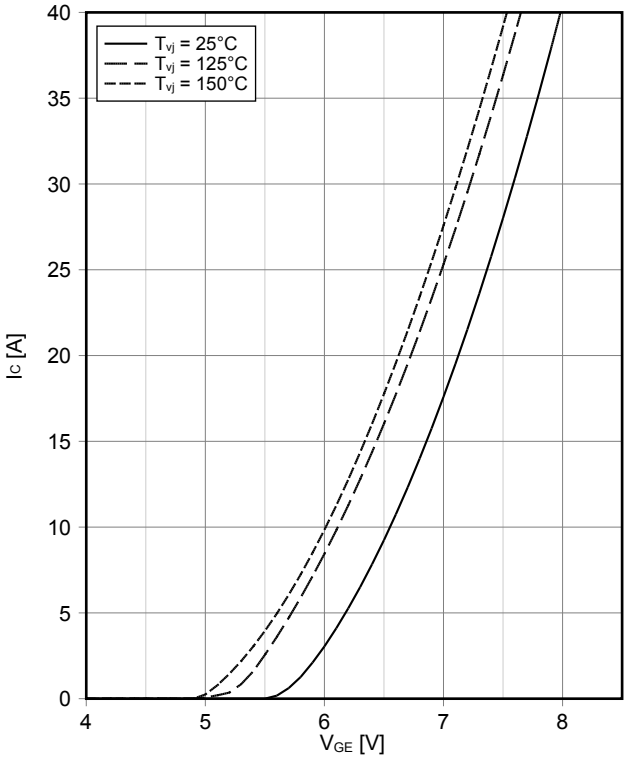
Ausgangskennlinie IGBT,Wechselrichter (typisch)
output characteristic IGBT,Inverter (typical)
$I_C = f(V_{CE})$
V_{GE} = 15 V



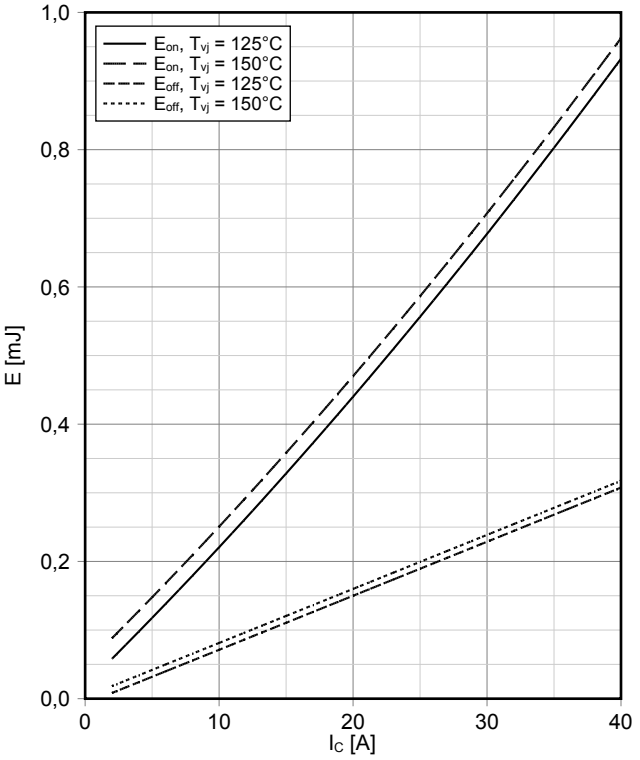
Ausgangskennlinienfeld IGBT,Wechselrichter (typisch)
output characteristic IGBT,Inverter (typical)
$I_C = f(V_{CE})$
T_{vj} = 150°C



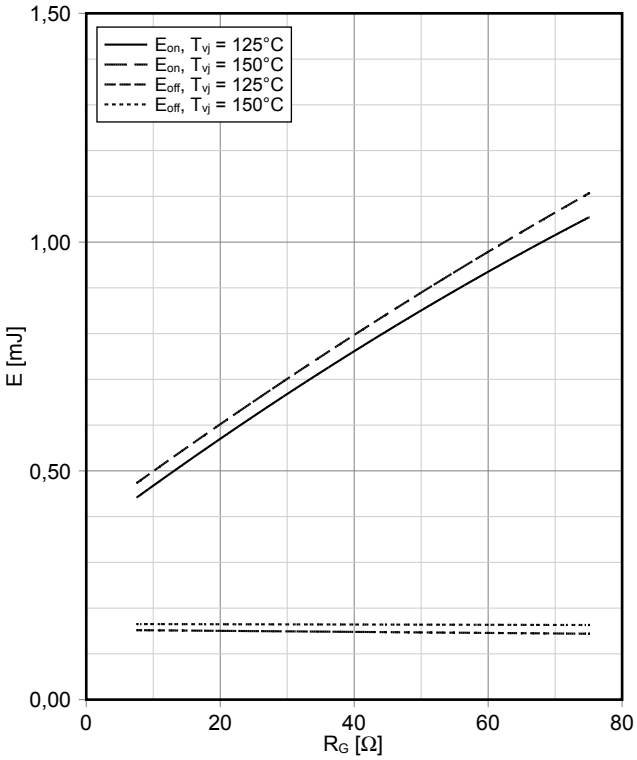
Übertragungscharakteristik IGBT,Wechselrichter (typisch)
transfer characteristic IGBT,Inverter (typical)
$I_C = f(V_{GE})$
V_{CE} = 20 V



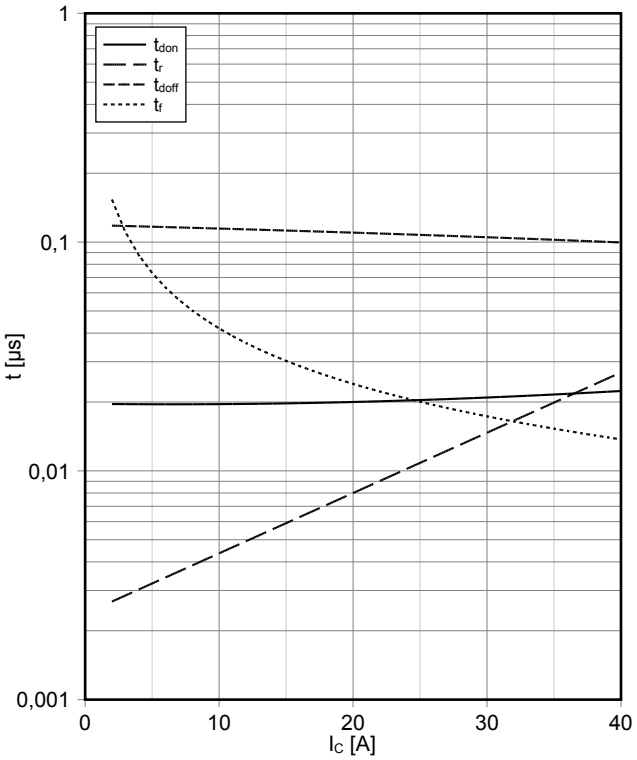
Schaltverluste IGBT,Wechselrichter (typisch)
switching losses IGBT,Inverter (typical)
$E_{on} = f(I_C)$, $E_{off} = f(I_C)$
V_{GE} = ±15 V, R_{Gon} = 7,5 Ω, R_{Goff} = 7,5 Ω, V_{CE} = 300 V



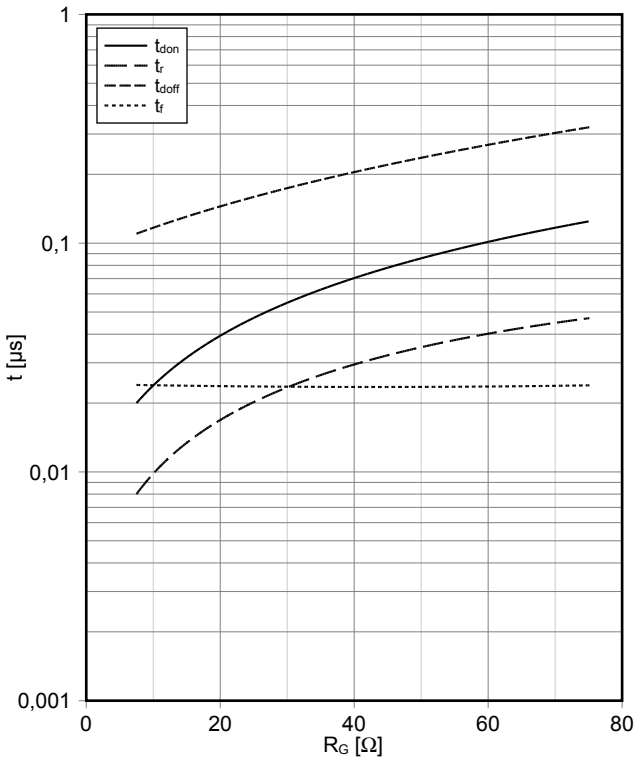
Schaltverluste IGBT,Wechselrichter (typisch)
switching losses IGBT,Inverter (typical)
$E_{on} = f(R_G)$, $E_{off} = f(R_G)$
V_{GE} = ±15 V, I_C = 20 A, V_{CE} = 300 V



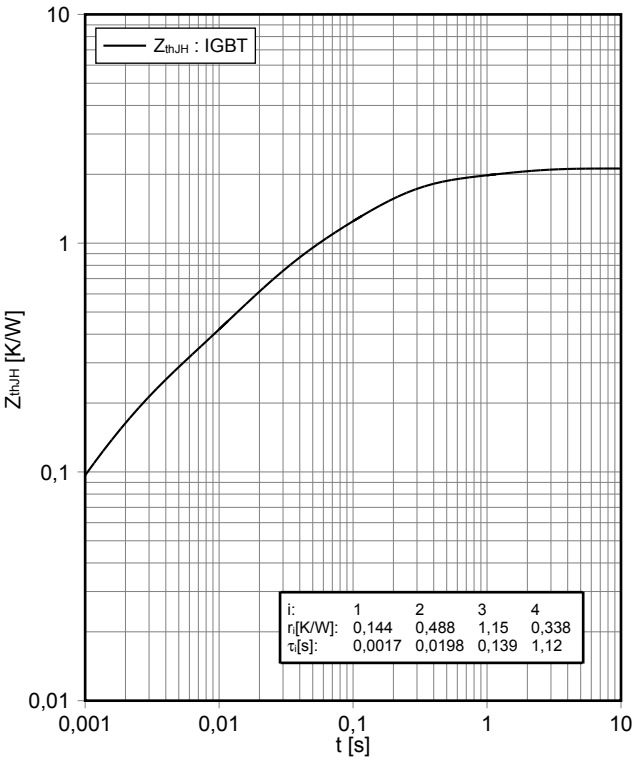
Schaltzeiten IGBT,Wechselrichter (typisch)
switching times IGBT,Inverter (typical)
$t_{don} = f(I_C)$, $t_r = f(I_C)$, $t_{doff} = f(I_C)$, $t_f = f(I_C)$
V_{GE} = ±15 V, R_{Gon} = 7.5 Ω, R_{Goff} = 7.5 Ω, V_{CE} = 300 V, T_{vj} = 150°C



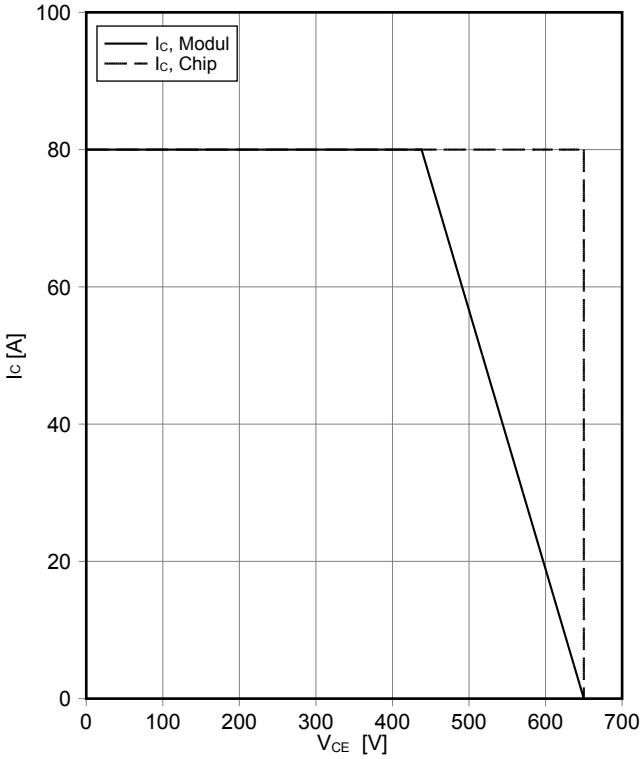
Schaltzeiten IGBT,Wechselrichter (typisch)
switching times IGBT,Inverter (typical)
$t_{don} = f(R_G)$, $t_r = f(R_G)$, $t_{doff} = f(R_G)$, $t_f = f(R_G)$
V_{GE} = ±15 V, I_C = 20 A, V_{CE} = 300 V, T_{vj} = 150°C



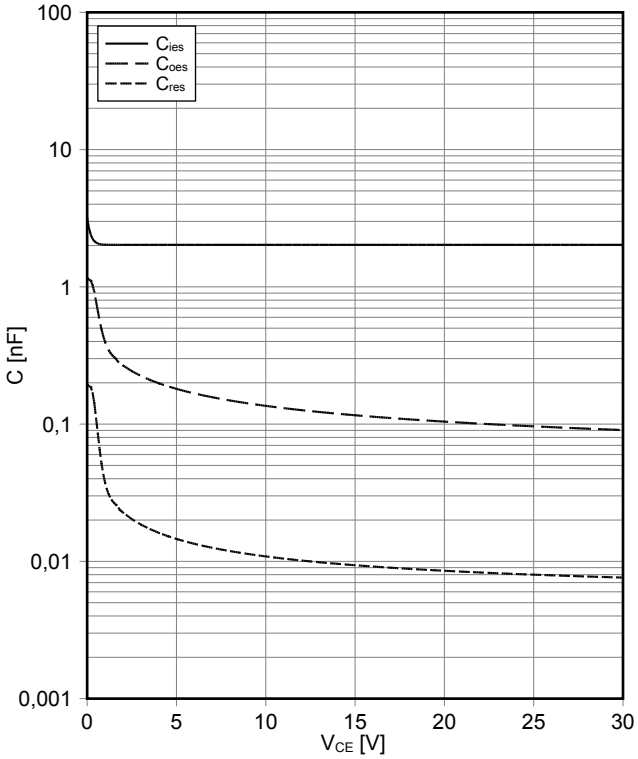
Transienter Wärmewiderstand IGBT,Wechselrichter
transient thermal impedance IGBT,Inverter
$Z_{thJH} = f(t)$



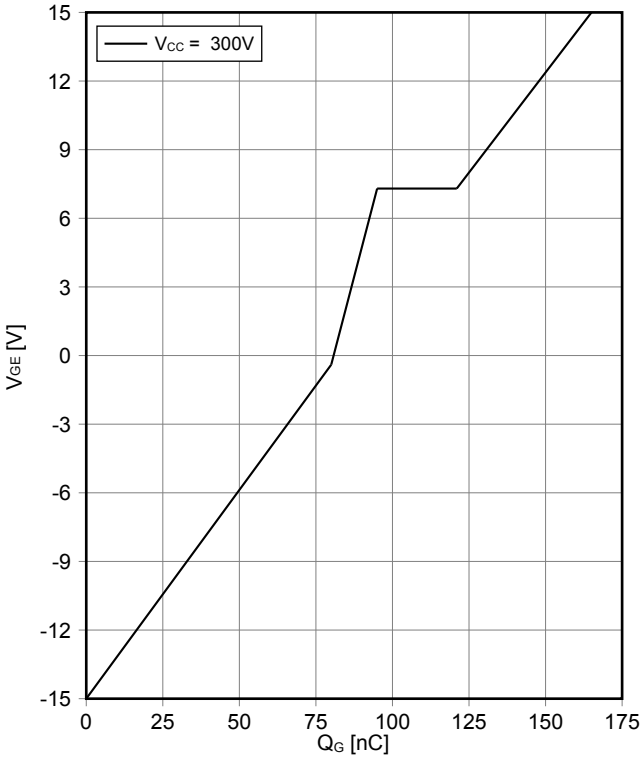
Sicherer Rückwärts-Arbeitsbereich IGBT,Wechselrichter (RBSOA)
reverse bias safe operating area IGBT,Inverter (RBSOA)
$I_C = f(V_{CE})$
$V_{GE} = \pm 15$ V, $R_{Goff} = 7.5\ \Omega$, $T_{vj} = 150°C$



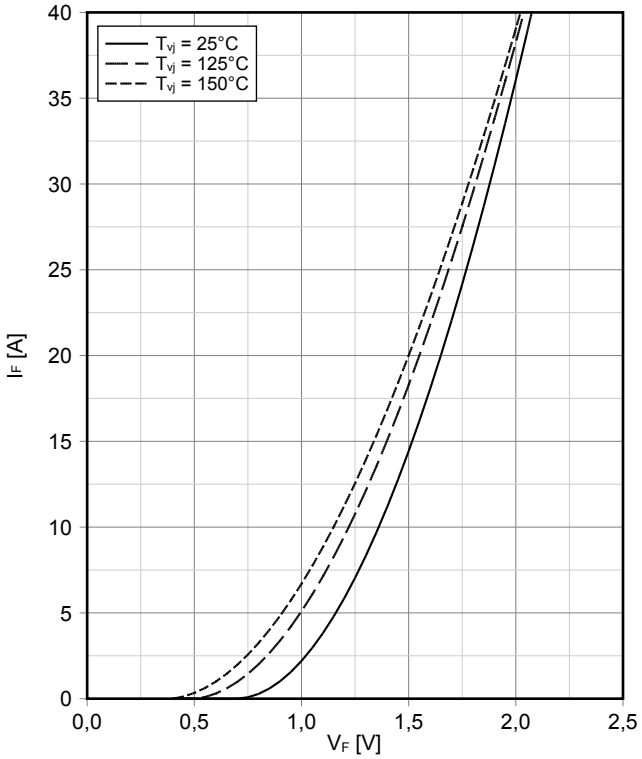
Kapazitäts Charakteristik IGBT,Wechselrichter (typisch)
capacity characteristic IGBT,Inverter (typical)
$C = f(V_{CE})$
$V_{GE} = 0$ V, $T_{vj} = 25°C$, f = 1MHz



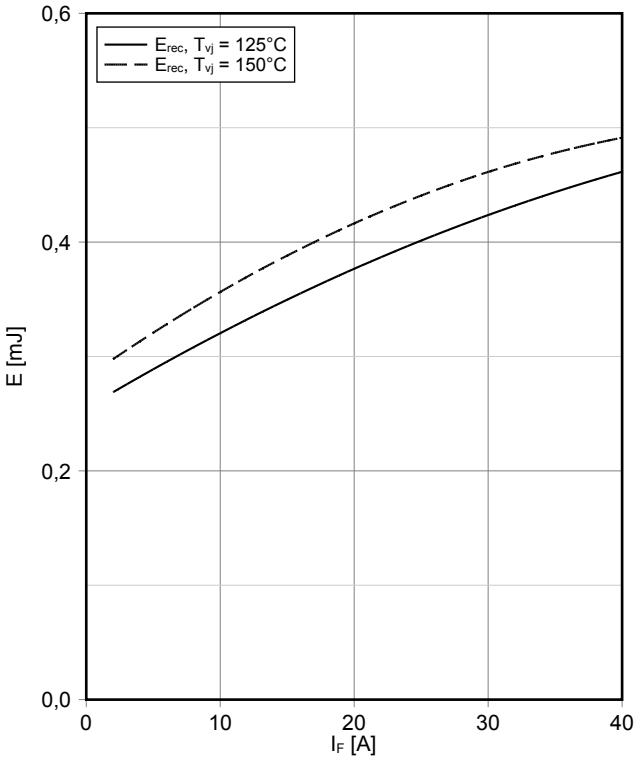
Gateladungs Charakteristik IGBT,Wechselrichter (typisch)
gate charge characteristic IGBT,Inverter (typical)
$V_{GE} = f(Q_G)$
$I_C = 20$ A, $T_{vj} = 25°C$



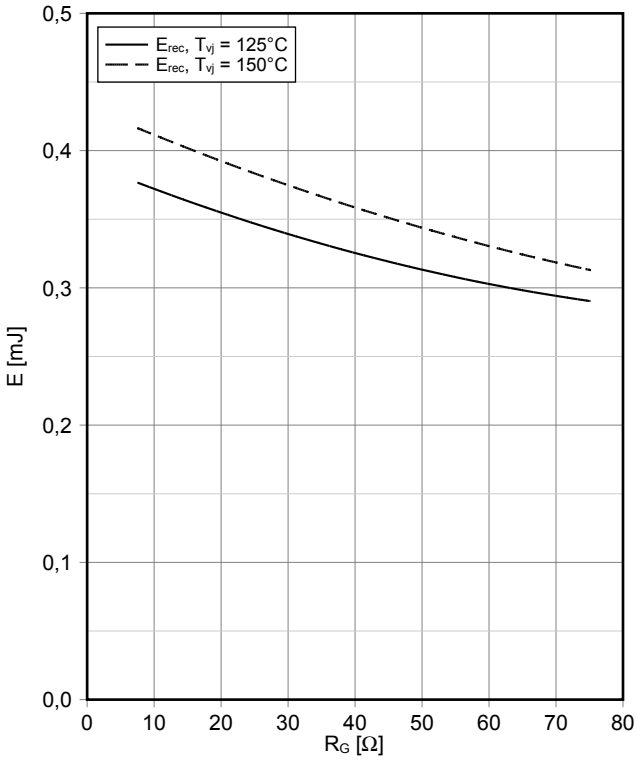
Durchlasskennlinie der Diode, Wechselrichter (typisch)
forward characteristic of Diode, Inverter (typical)
$I_F = f(V_F)$



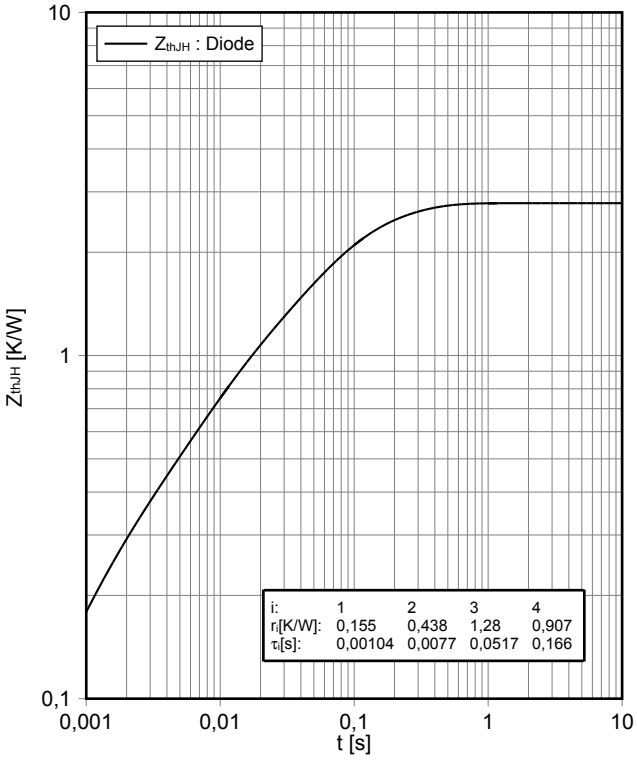
Schaltverluste Diode, Wechselrichter (typisch)
switching losses Diode, Inverter (typical)
$E_{rec} = f(I_F)$
$R_{Gon} = 7{,}5\ \Omega$, $V_{CE} = 300$ V



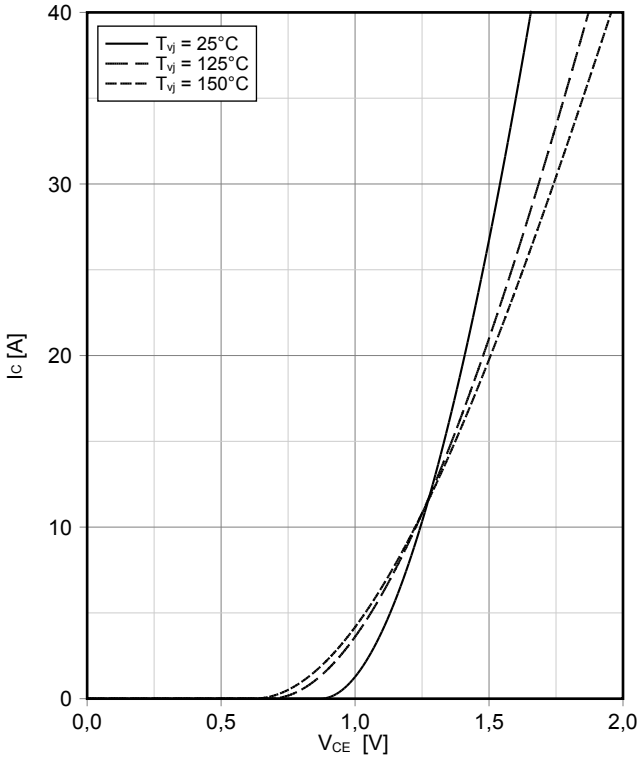
Schaltverluste Diode, Wechselrichter (typisch)
switching losses Diode, Inverter (typical)
$E_{rec} = f(R_G)$
$I_F = 20$ A, $V_{CE} = 300$ V



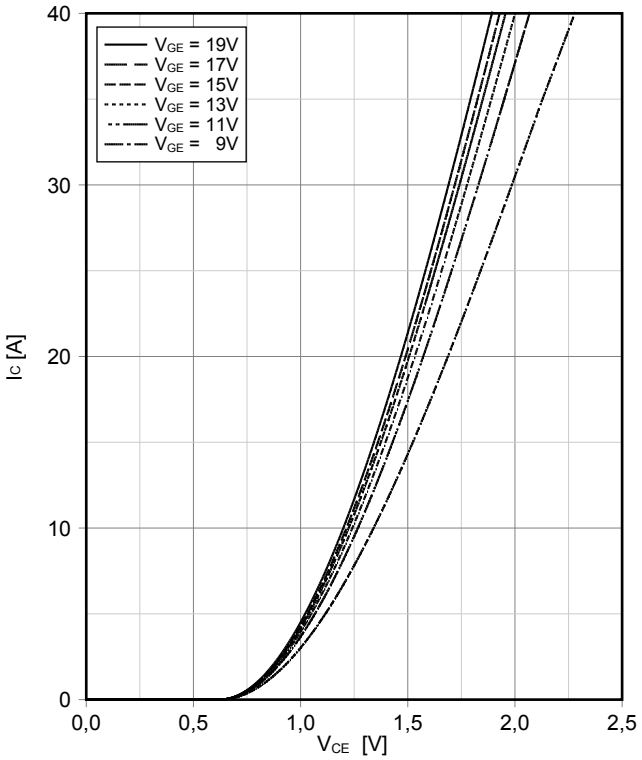
Transienter Wärmewiderstand Diode, Wechselrichter
transient thermal impedance Diode, Inverter
$Z_{thJH} = f(t)$



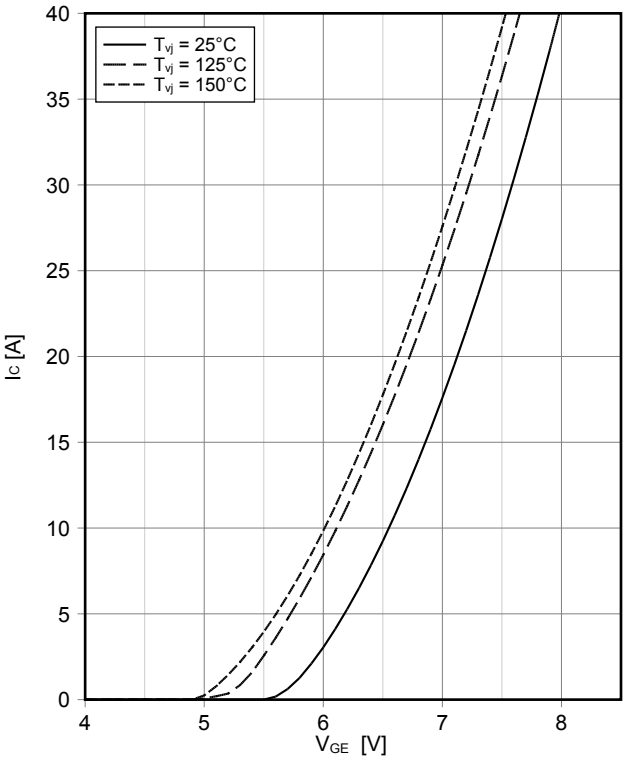
Ausgangskennlinie IGBT,3-Level (typisch)
output characteristic IGBT,3-Level (typical)
$I_C = f(V_{CE})$
$V_{GE} = 15$ V



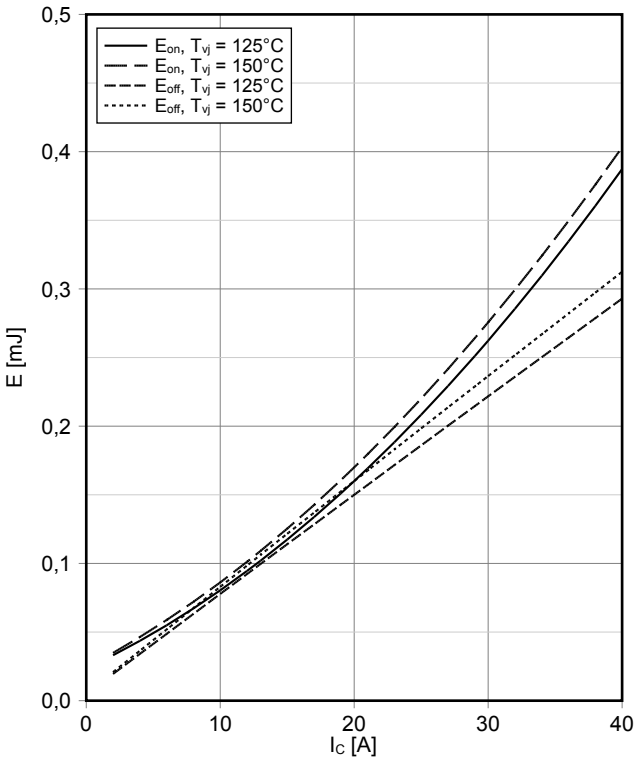
Ausgangskennlinienfeld IGBT,3-Level (typisch)
output characteristic IGBT,3-Level (typical)
$I_C = f(V_{CE})$
$T_{vj} = 150°C$



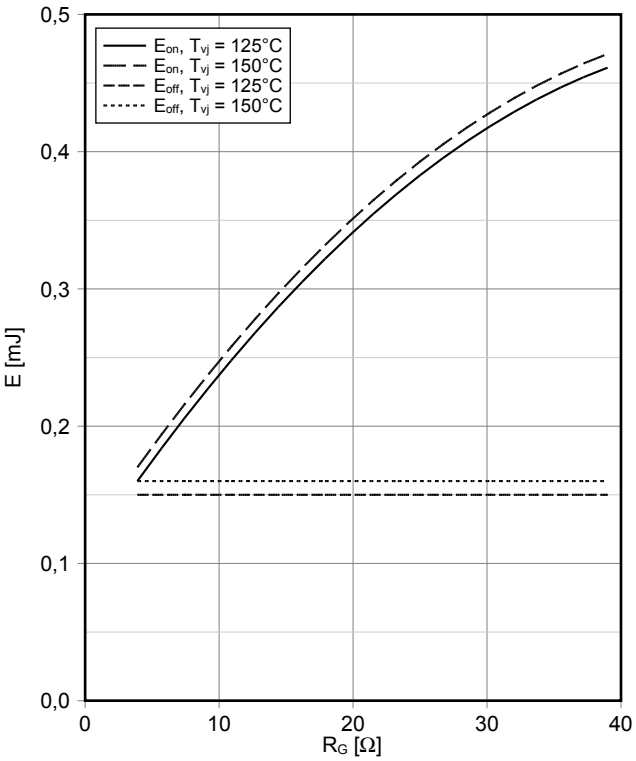
Übertragungscharakteristik IGBT,3-Level (typisch)
transfer characteristic IGBT,3-Level (typical)
$I_C = f(V_{GE})$
$V_{CE} = 20$ V



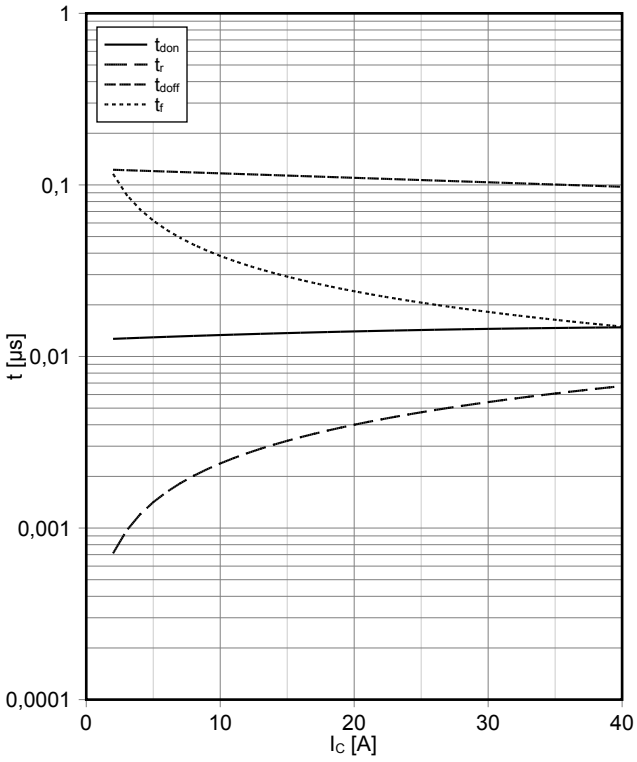
Schaltverluste IGBT,3-Level (typisch)
switching losses IGBT,3-Level (typical)
$E_{on} = f(I_C)$, $E_{off} = f(I_C)$
$V_{GE} = \pm 15$ V, $R_{Gon} = 3{,}9\ \Omega$, $R_{Goff} = 3{,}9\ \Omega$, $V_{CE} = 300$ V



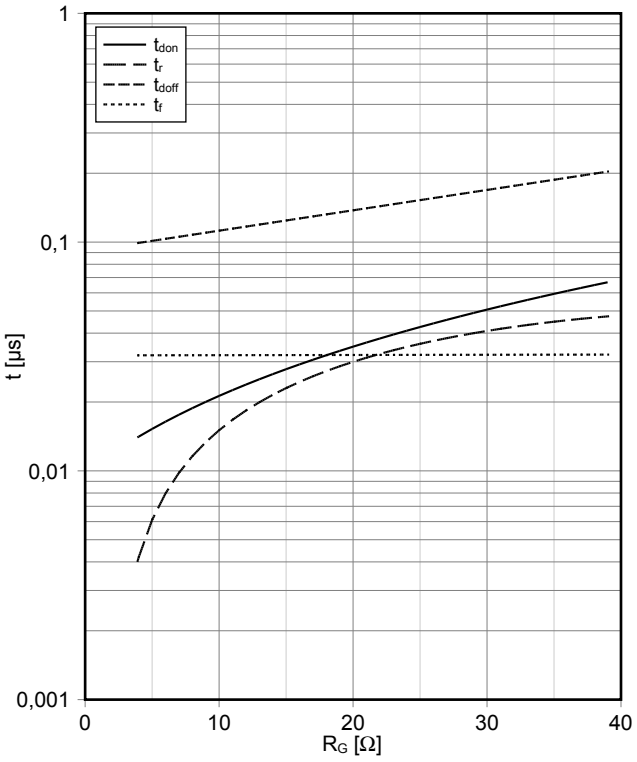
Schaltverluste IGBT,3-Level (typisch)
switching losses IGBT,3-Level (typical)
$E_{on} = f(R_G)$, $E_{off} = f(R_G)$
$V_{GE} = \pm 15$ V, $I_C = 20$ A, $V_{CE} = 300$ V



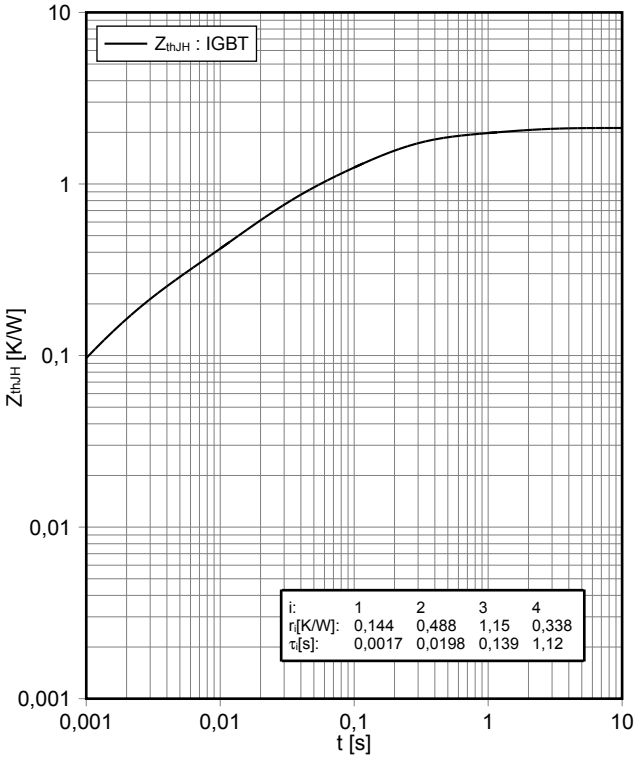
Schaltzeiten IGBT,3-Level (typisch)
switching times IGBT,3-Level (typical)
$t_{don} = f(I_C)$, $t_r = f(I_C)$, $t_{doff} = f(I_C)$, $t_f = f(I_C)$
V_{GE} = ±15 V, R_{Gon} = 3.9 Ω, R_{Goff} = 3.9 Ω, V_{CE} = 300 V, T_{vj} = 150°C



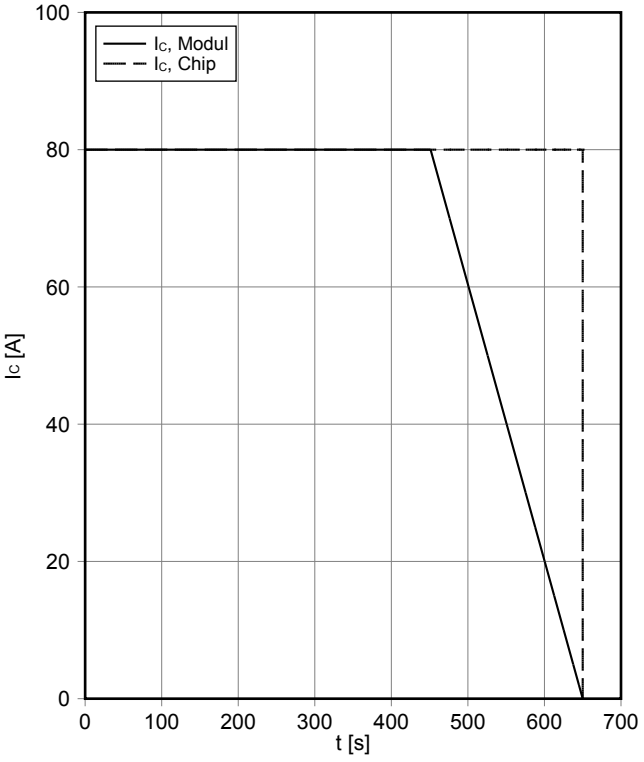
Schaltzeiten IGBT,3-Level (typisch)
switching times IGBT,3-Level (typical)
$t_{don} = f(R_G)$, $t_r = f(R_G)$, $t_{doff} = f(R_G)$, $t_f = f(R_G)$
V_{GE} = ±15 V, I_C = 20 A, V_{CE} = 300 V, T_{vj} = 150°C



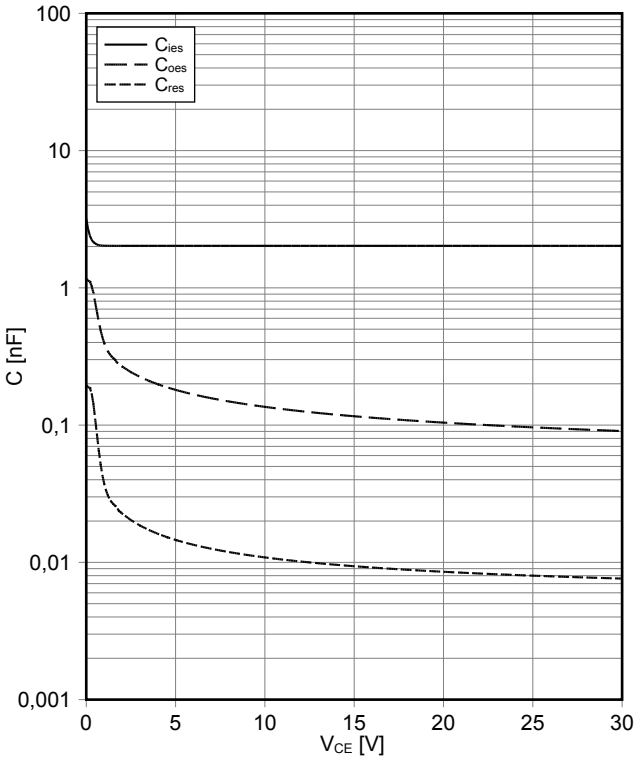
Transienter Wärmewiderstand IGBT,3-Level
transient thermal impedance IGBT,3-Level
$Z_{thJH} = f(t)$



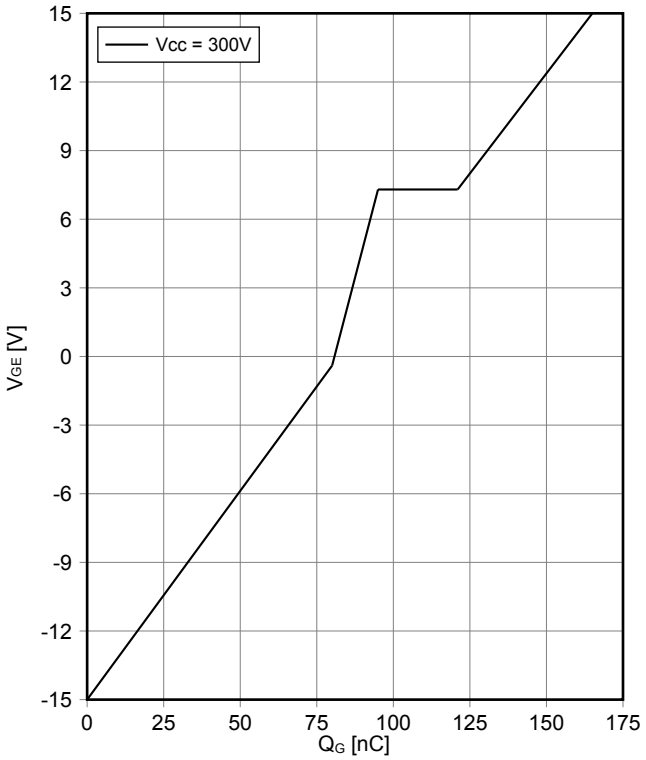
Sicherer Rückwärts-Arbeitsbereich IGBT,3-Level (RBSOA)
reverse bias safe operating area IGBT,3-Level (RBSOA)
$I_C = f(V_{CE})$
V_{GE} = ±15 V, R_{Goff} = 3.9 Ω, T_{vj} = 150°C



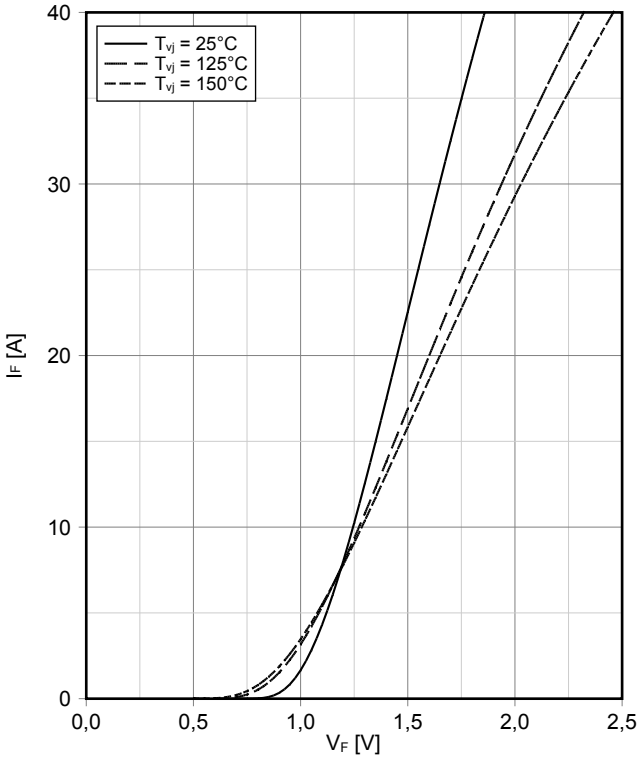
Kapazitäts Charakteristik IGBT,3-Level (typisch)
capacity characteristic IGBT,3-Level (typical)
$C = f(V_{CE})$
V_{GE} = 0 V, T_{vj} = 25°C, f = 1MHz



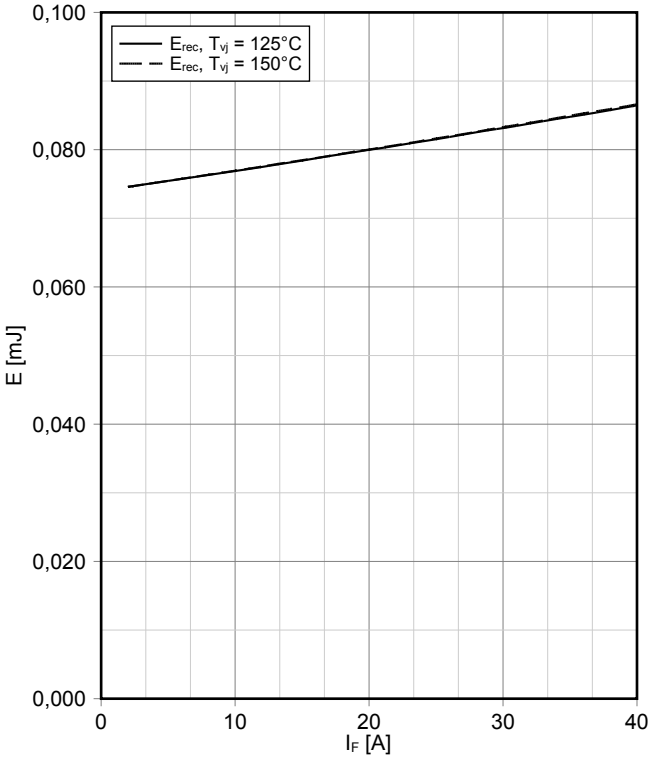
Gateladungs Charakteristik IGBT,3-Level (typisch)
gate charge characteristic IGBT,3-Level (typical)
$V_{GE} = f(Q_G)$
I_C = 20 A, T_{vj} = 25°C



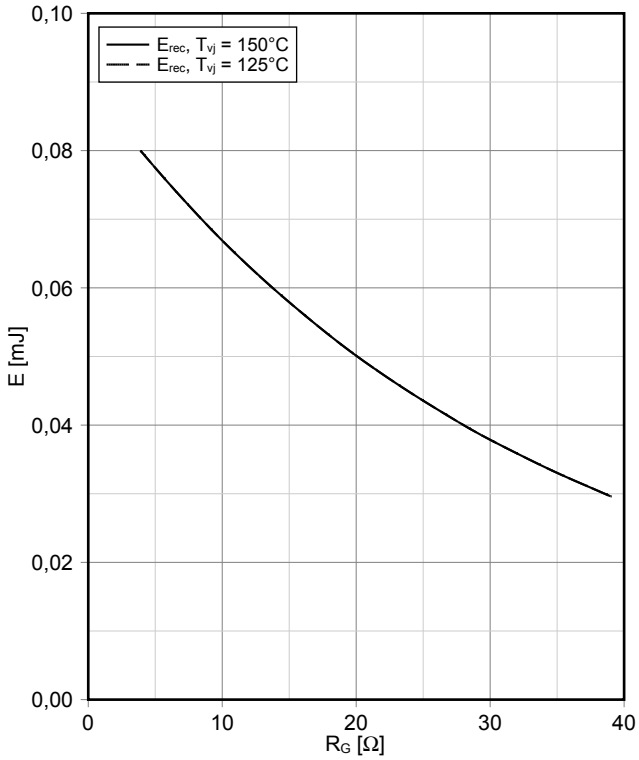
Durchlasskennlinie der Diode, 3-Level (typisch)
forward characteristic of Diode, 3-Level (typical)
$I_F = f(V_F)$



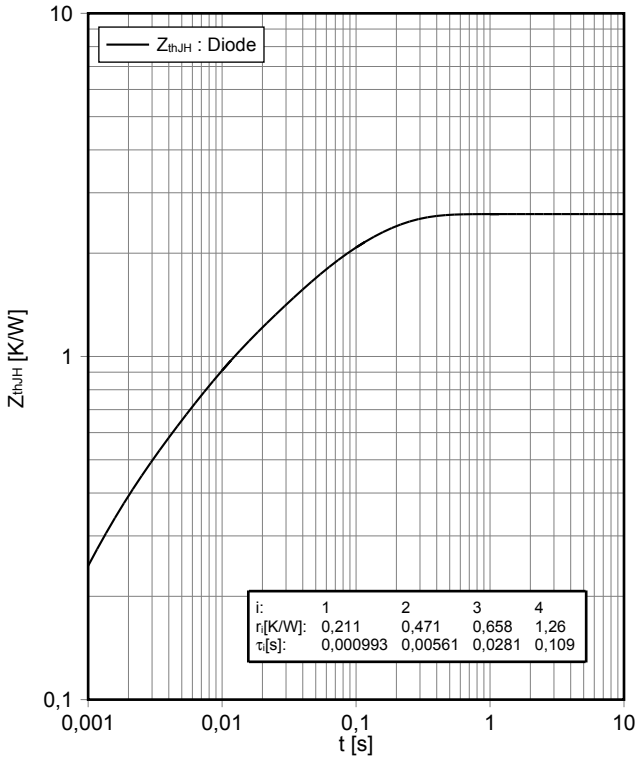
Schaltverluste Diode, 3-Level (typisch)
switching losses Diode, 3-Level (typical)
$E_{rec} = f(I_F)$
R_{Gon} = 3,9 Ω, V_{CE} = 300 V



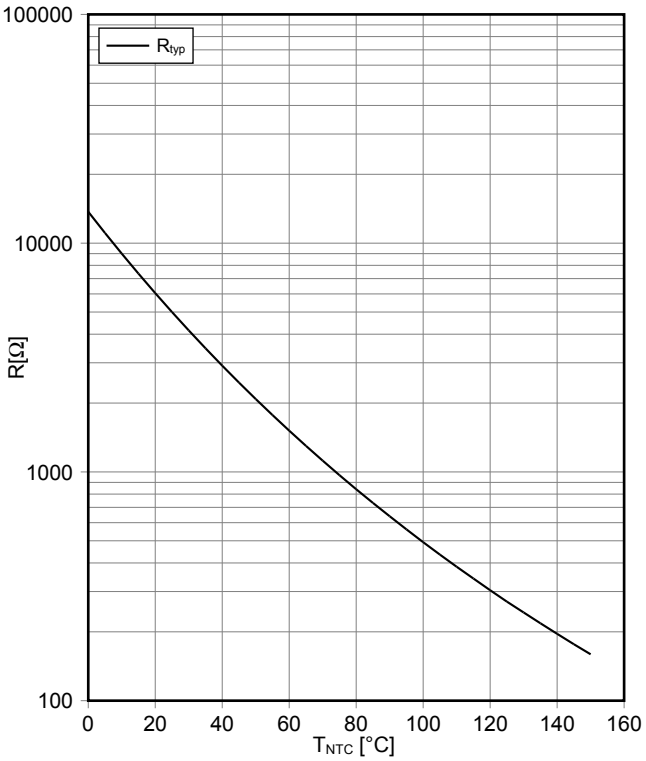
Schaltverluste Diode, 3-Level (typisch)
switching losses Diode, 3-Level (typical)
$E_{rec} = f(R_G)$
$I_F = 20\ A$, $V_{CE} = 300\ V$



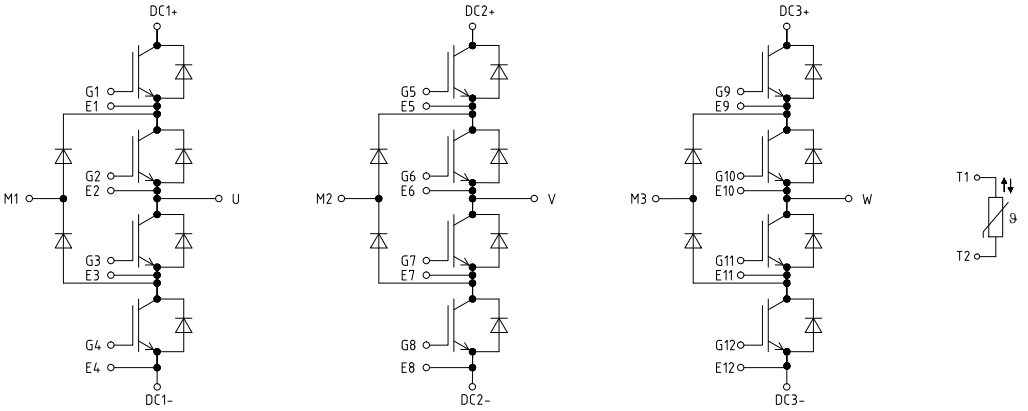
Transienter Wärmewiderstand Diode, 3-Level
transient thermal impedance Diode, 3-Level
$Z_{thJH} = f(t)$



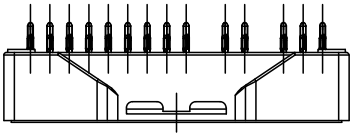
NTC-Widerstand-Temperaturkennlinie (typisch)
NTC-Thermistor-temperature characteristic (typical)
$R = f(T)$

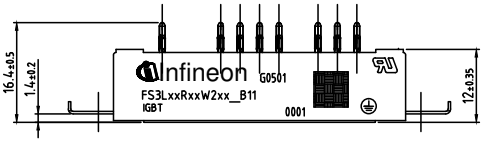


Schaltplan / Circuit diagram



Gehäuseabmessungen / Package outlines

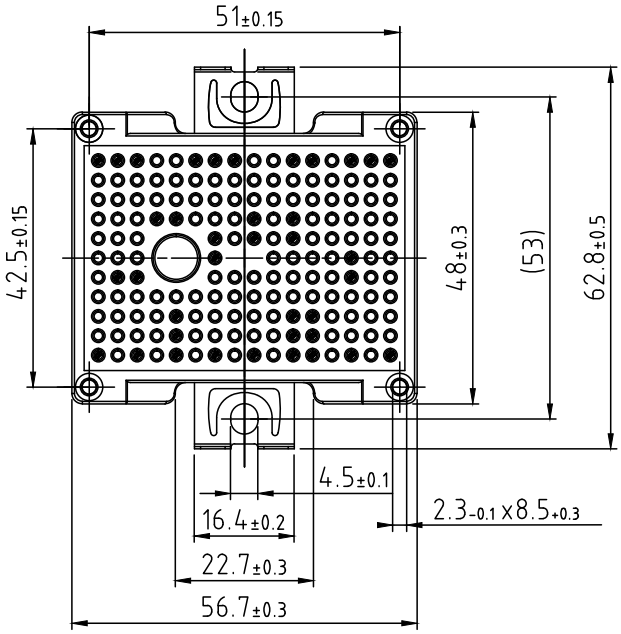


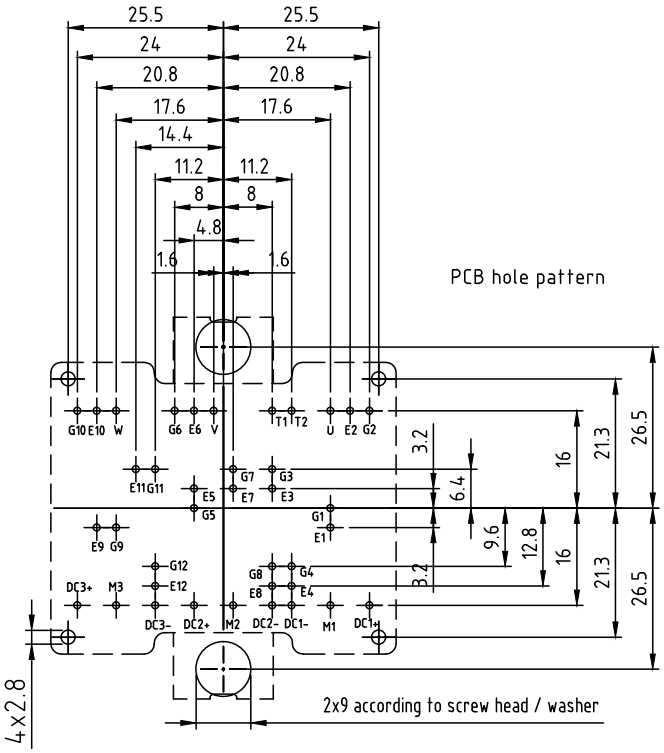


- Pin-Grid 3.2mm
- Tolerance of PCB hole pattern ⌖ ϕ0.1
- Hole specification for contacts see AN 2009-01:

  Diameters of drill Ø 1.15mm

  and copper thickness in hole 25-50µm





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