EasyPACK™ module with TRENCHSTOP™ 5 and Emitter Controlled 3 diode and PressFIT / NTC

Features

- Electrical features
  - V_{CES} = 650 V
  - $I_{C\ nom}$ = 200 A / I_{CRM} = 400 A
  - Low switching losses
- Mechanical features
  - Al_2O_3 substrate with low thermal resistance
  - Compact design
  - PressFIT contact technology
  - Integrated NTC temperature sensor
  - High power density

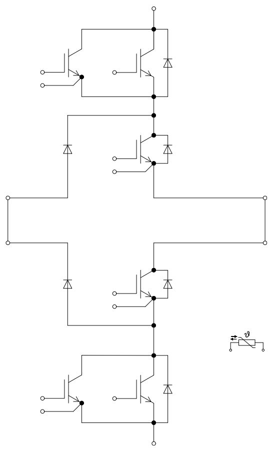
Potential applications

- Solar applications
- 3-level-applications

Product validation

- Qualified for industrial applications according to the relevant tests of IEC 60747, 60749 and 60068

Description



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1 Package

Table 1 Insulation coordination

Parameter	Symbol	Note or test condition	Values	Unit
Isolation test voltage	V_{ISOL}	RMS, f = 50 Hz, t = 1 min	3.2	kV
Internal Isolation		basic insulation (class 1, IEC 61140)	Al_2O_3	
Creepage distance	d_{Creep}	terminal to heatsink	11.2	mm
Creepage distance	d_{Creep}	terminal to terminal	6.8	mm
Clearance	d_{Clear}	terminal to heatsink	9.4	mm
Clearance	d_{Clear}	terminal to terminal	5.5	mm
Comparative tracking index	*CTI*		> 400	
RTI Elec.	*RTI*	housing	140	°C

Table 2 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Stray inductance module	L_{sCE}				12		nH
Storage temperature	T_{stg}			-40		125	°C
Mounting torque for modul mounting	*M*	- Mounting according to valid application note	M5, Screw	1.3		1.5	Nm
Weight	*G*				78		g

Note: The current under continuous operation is limited to 25A rms per connector pin.

2 IGBT, T1.1 / T1.2 / T4.1 / T4.2

Table 3 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Collector-emitter voltage	V_{CES}		T_{vj} = 25 °C	650	V
Implemented collector current	I_{CN}			200	A
Continous DC collector current	I_{CDC}	$T_{vj\,max}$ = 175 °C	T_H = 65 °C	130	A
Repetitive peak collector current	I_{CRM}	t_P = 1 ms		400	A
Gate-emitter peak voltage	V_{GES}			±20	V

Table 4 **Characteristic values**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage	$V_{CE\ sat}$	I_C = 100 A, V_{GE} = 15 V	T_{vj} = 25 °C		1.17	1.50	V
			T_{vj} = 125 °C		1.20		
			T_{vj} = 150 °C		1.21		
Gate threshold voltage	V_{GEth}	I_C = 2 mA, V_{CE} = V_{GE}, T_{vj} = 25 °C		3.25	4	4.75	V
Gate charge	Q_G	V_{GE} = ±15 V, V_{CE} = 400 V			0.84		µC
Internal gate resistor	R_{Gint}	T_{vj} = 25 °C			0		Ω
Input capacitance	C_{ies}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			14.3		nF
Reverse transfer capacitance	C_{res}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			0.05		nF
Collector-emitter cut-off current	I_{CES}	V_{CE} = 650 V, V_{GE} = 0 V	T_{vj} = 25 °C			0.019	mA
Gate-emitter leakage current	I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25 °C				100	nA
Turn-on delay time (inductive load)	t_{don}	I_C = 100 A, V_{CE} = 300 V, V_{GE} = ±15 V, R_{Gon} = 4.7 Ω	T_{vj} = 25 °C		0.022		µs
			T_{vj} = 125 °C		0.021		
			T_{vj} = 150 °C		0.021		
Rise time (inductive load)	t_r	I_C = 100 A, V_{CE} = 300 V, V_{GE} = ±15 V, R_{Gon} = 4.7 Ω	T_{vj} = 25 °C		0.013		µs
			T_{vj} = 125 °C		0.015		
			T_{vj} = 150 °C		0.015		
Turn-off delay time (inductive load)	t_{doff}	I_C = 100 A, V_{CE} = 300 V, V_{GE} = ±15 V, R_{Goff} = 4.7 Ω	T_{vj} = 25 °C		0.117		µs
			T_{vj} = 125 °C		0.145		
			T_{vj} = 150 °C		0.158		
Fall time (inductive load)	t_f	I_C = 100 A, V_{CE} = 300 V, V_{GE} = ±15 V, R_{Goff} = 4.7 Ω	T_{vj} = 25 °C		0.044		µs
			T_{vj} = 125 °C		0.046		
			T_{vj} = 150 °C		0.047		
Turn-on energy loss per pulse	E_{on}	I_C = 100 A, V_{CE} = 300 V, L_σ = 35 nH, V_{GE} = ±15 V, R_{Gon} = 4.7 Ω, di/dt = 12.5 kA/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		1		mJ
			T_{vj} = 125 °C		1.4		
			T_{vj} = 150 °C		1.49		
Turn-off energy loss per pulse	E_{off}	I_C = 100 A, V_{CE} = 300 V, L_σ = 35 nH, V_{GE} = ±15 V, R_{Goff} = 4.7 Ω, dv/dt = 4400 V/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		0.78		mJ
			T_{vj} = 125 °C		1.28		
			T_{vj} = 150 °C		1.4		
Thermal resistance, junction to heatsink	R_{thJH}	per IGBT, λ_{grease}= 3.3 W/(m*K)			0.478		K/W
Temperature under switching conditions	$T_{vj\ op}$			-40		150	°C

3 IGBT, T2 / T3

Table 5 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Collector-emitter voltage	V_{CES}		T_{vj} = 25 °C	650	V
Implemented collector current	I_{CN}			300	A
Continous DC collector current	I_{CDC}	$T_{vj\,max}$ = 175 °C	T_H = 65 °C	255	A
Repetitive peak collector current	I_{CRM}	t_P = 1 ms		600	A
Gate-emitter peak voltage	V_{GES}			±20	V

Table 6 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage	$V_{CE\,sat}$	I_C = 100 A, V_{GE} = 15 V	T_{vj} = 25 °C		0.88	1.13	V
			T_{vj} = 125 °C		0.80		
			T_{vj} = 150 °C		0.77		
Gate threshold voltage	V_{GEth}	I_C = 4 mA, V_{CE} = 20 V, T_{vj} = 25 °C		4.25	5	5.75	V
Gate charge	Q_G	V_{GE} = ±15 V, V_{CE} = 400 V			3.7		µC
Internal gate resistor	R_{Gint}	T_{vj} = 25 °C			0		Ω
Input capacitance	C_{ies}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			47.1		nF
Reverse transfer capacitance	C_{res}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			0.168		nF
Collector-emitter cut-off current	I_{CES}	V_{CE} = 650 V, V_{GE} = 0 V	T_{vj} = 25 °C			0.019	mA
Gate-emitter leakage current	I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25 °C				100	nA
Turn-on delay time (inductive load)	t_{don}	I_C = 100 A, V_{CE} = 300 V, V_{GE} = ±15 V, R_{Gon} = 6.8 Ω	T_{vj} = 25 °C		0.128		µs
			T_{vj} = 125 °C		0.108		
			T_{vj} = 150 °C		0.103		
Rise time (inductive load)	t_r	I_C = 100 A, V_{CE} = 300 V, V_{GE} = ±15 V, R_{Gon} = 6.8 Ω	T_{vj} = 25 °C		0.025		µs
			T_{vj} = 125 °C		0.030		
			T_{vj} = 150 °C		0.031		
Turn-off delay time (inductive load)	t_{doff}	I_C = 100 A, V_{CE} = 300 V, V_{GE} = ±15 V, R_{Goff} = 6.8 Ω	T_{vj} = 25 °C		0.693		µs
			T_{vj} = 125 °C		0.821		
			T_{vj} = 150 °C		0.853		

Table 6 **Characteristic values (continued)**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Fall time (inductive load)	t_f	I_C = 100 A, V_{CE} = 300 V, V_{GE} = ±15 V, R_{Goff} = 6.8 Ω	T_{vj} = 25 °C		0.129		µs
			T_{vj} = 125 °C		0.213		
			T_{vj} = 150 °C		0.234		
Turn-on energy loss per pulse	E_{on}	I_C = 100 A, V_{CE} = 300 V, $L_σ$ = 35 nH, V_{GE} = ±15 V, R_{Gon} = 6.8 Ω, di/dt = 2700 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		1.06		mJ
			T_{vj} = 125 °C		1.44		
			T_{vj} = 150 °C		1.54		
Turn-off energy loss per pulse	E_{off}	I_C = 100 A, V_{CE} = 300 V, $L_σ$ = 35 nH, V_{GE} = ±15 V, R_{Goff} = 6.8 Ω, dv/dt = 760 V/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		5.24		mJ
			T_{vj} = 125 °C		8.18		
			T_{vj} = 150 °C		8.84		
Thermal resistance, junction to heatsink	R_{thJH}	per IGBT, $λ_{grease}$= 3.3 W/(m*K)			0.300		K/W
Temperature under switching conditions	$T_{vj\,op}$			-40		150	°C

4 Diode, D1 / D4

Table 7 **Maximum rated values**

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		T_{vj} = 25 °C	650	V
Implemented forward current	I_{FN}			225	A
Continous DC forward current	I_F			100	A
Repetitive peak forward current	I_{FRM}	t_P = 1 ms		450	A
I^2t - value	I^2t	V_R = 0 V, t_P = 10 ms	T_{vj} = 125 °C	3030	A^2s
			T_{vj} = 150 °C	2760	

Table 8 **Characteristic values**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Forward voltage	V_F	I_F = 100 A, V_{GE} = 0 V	T_{vj} = 25 °C		1.26	1.55	V
			T_{vj} = 125 °C		1.16		
			T_{vj} = 150 °C		1.11		

Table 8 **Characteristic values (continued)**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Peak reverse recovery current	I_{RM}	I_F = 100 A, V_R = 300 V, V_{GE} = -15 V, -di_F/dt = 2700 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		105		A
			T_{vj} = 125 °C		141		
			T_{vj} = 150 °C		151		
Recovered charge	Q_r	I_F = 100 A, V_R = 300 V, V_{GE} = -15 V, -di_F/dt = 2700 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		5.94		µC
			T_{vj} = 125 °C		11.6		
			T_{vj} = 150 °C		13.5		
Reverse recovery energy	E_{rec}	I_F = 100 A, V_R = 300 V, V_{GE} = -15 V, -di_F/dt = 2700 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		1.3		mJ
			T_{vj} = 125 °C		2.58		
			T_{vj} = 150 °C		3.01		
Thermal resistance, junction to heatsink	R_{thJH}	per diode, λ_{grease}= 3.3 W/(m*K)			0.431		K/W
Temperature under switching conditions	$T_{vj\ op}$			-40		150	°C

5 Diode, D2 / D3

Table 9 **Maximum rated values**

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		T_{vj} = 25 °C	650	V
Implemented forward current	I_{FN}			225	A
Continous DC forward current	I_F			100	A
Repetitive peak forward current	I_{FRM}	t_P = 1 ms		450	A
I^2t - value	I^2t	V_R = 0 V, t_P = 10 ms	T_{vj} = 125 °C	3030	A^2s
			T_{vj} = 150 °C	2760	

Table 10 **Characteristic values**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Forward voltage	V_F	I_F = 100 A, V_{GE} = 0 V	T_{vj} = 25 °C		1.26	1.55	V
			T_{vj} = 125 °C		1.16		
			T_{vj} = 150 °C		1.11		

Table 10 Characteristic values (continued)

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Peak reverse recovery current	I_{RM}	I_F = 100 A, V_R = 300 V, V_{GE} = -15 V, -di$_F$/dt = 2700 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		105		A
			T_{vj} = 125 °C		141		
			T_{vj} = 150 °C		151		
Recovered charge	Q_r	I_F = 100 A, V_R = 300 V, V_{GE} = -15 V, -di$_F$/dt = 2700 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		5.94		µC
			T_{vj} = 125 °C		11.6		
			T_{vj} = 150 °C		13.5		
Reverse recovery energy	E_{rec}	I_F = 100 A, V_R = 300 V, V_{GE} = -15 V, -di$_F$/dt = 2700 A/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		1.3		mJ
			T_{vj} = 125 °C		2.58		
			T_{vj} = 150 °C		3.01		
Thermal resistance, junction to heatsink	R_{thJH}	per diode, λ_{grease}= 3.3 W/(m*K)			0.390		K/W
Temperature under switching conditions	$T_{vj\ op}$			-40		150	°C

6 Diode, D5 / D6

Table 11 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		T_{vj} = 25 °C	650	V
Implemented forward current	I_{FN}			300	A
Continous DC forward current	I_F			100	A
Repetitive peak forward current	I_{FRM}	t_P = 1 ms		600	A
I^2t - value	I^2t	V_R = 0 V, t_P = 10 ms	T_{vj} = 125 °C	6610	A^2s
			T_{vj} = 150 °C	6050	

Table 12 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Forward voltage	V_F	I_F = 100 A, V_{GE} = 0 V	T_{vj} = 25 °C		1.19	1.47	V
			T_{vj} = 125 °C		1.07		
			T_{vj} = 150 °C		1.02		

Table 12 **Characteristic values (continued)**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Peak reverse recovery current	I_{RM}	I_F = 100 A, V_R = 300 V, V_{GE} = -15 V, -di$_F$/dt = 12.5 kA/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		135		A
			T_{vj} = 125 °C		186		
			T_{vj} = 150 °C		199		
Recovered charge	Q_r	I_F = 100 A, V_R = 300 V, V_{GE} = -15 V, -di$_F$/dt = 12.5 kA/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		5.05		µC
			T_{vj} = 125 °C		12		
			T_{vj} = 150 °C		14.4		
Reverse recovery energy	E_{rec}	I_F = 100 A, V_R = 300 V, V_{GE} = -15 V, -di$_F$/dt = 12.5 kA/µs (T_{vj} = 150 °C)	T_{vj} = 25 °C		0.931		mJ
			T_{vj} = 125 °C		2.64		
			T_{vj} = 150 °C		3.26		
Thermal resistance, junction to heatsink	R_{thJH}	per diode, λ_{grease}= 3.3 W/(m*K)			0.479		K/W
Temperature under switching conditions	$T_{vj\,op}$			-40		150	°C

7 NTC-Thermistor

Table 13 **Characteristic values**

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Rated resistance	R_{25}	T_{NTC} = 25 °C		5		kΩ
Deviation of R_{100}	$\Delta R/R$	T_{NTC} = 100 °C, R_{100} = 493 Ω	-5		5	%
Power dissipation	P_{25}	T_{NTC} = 25 °C			20	mW
B-value	$B_{25/50}$	$R_2 = R_{25}\ \exp[B_{25/50}(1/T_2 - 1/(298,15\ K))]$		3375		K
B-value	$B_{25/80}$	$R_2 = R_{25}\ \exp[B_{25/80}(1/T_2 - 1/(298,15\ K))]$		3411		K
B-value	$B_{25/100}$	$R_2 = R_{25}\ \exp[B_{25/100}(1/T_2 - 1/(298,15\ K))]$		3433		K

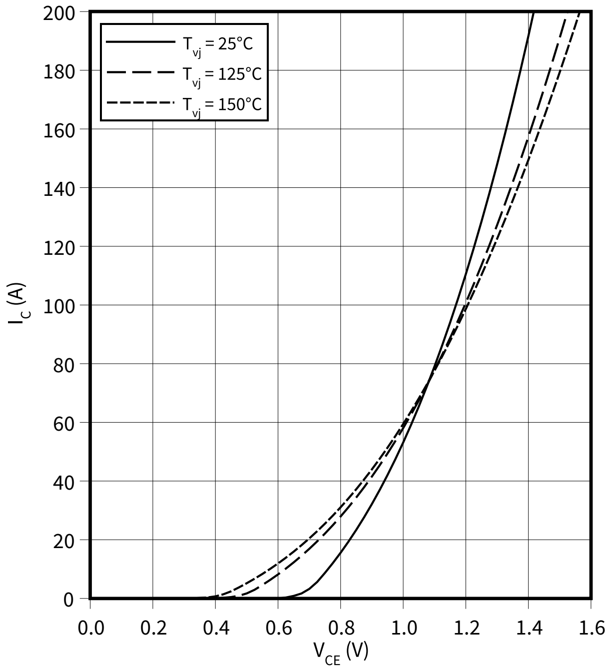
Note: Specification according to the valid application note.

8 Characteristics diagrams

output characteristic (typical), IGBT, T1.1 / T1.2 / T4.1 / T4.2

$I_C = f(V_{CE})$

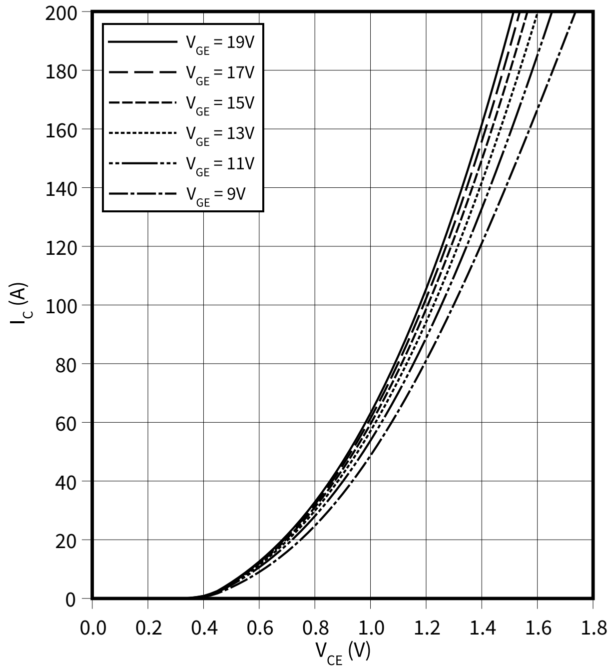
$V_{GE} = 15$ V



output characteristic (typical), IGBT, T1.1 / T1.2 / T4.1 / T4.2

$I_C = f(V_{CE})$

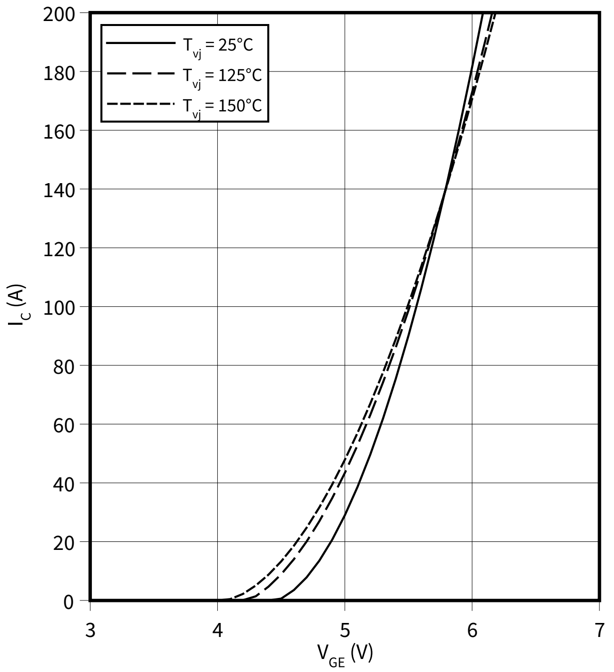
$T_{vj} = 150$ °C



transfer characteristic (typical), IGBT, T1.1 / T1.2 / T4.1 / T4.2

$I_C = f(V_{GE})$

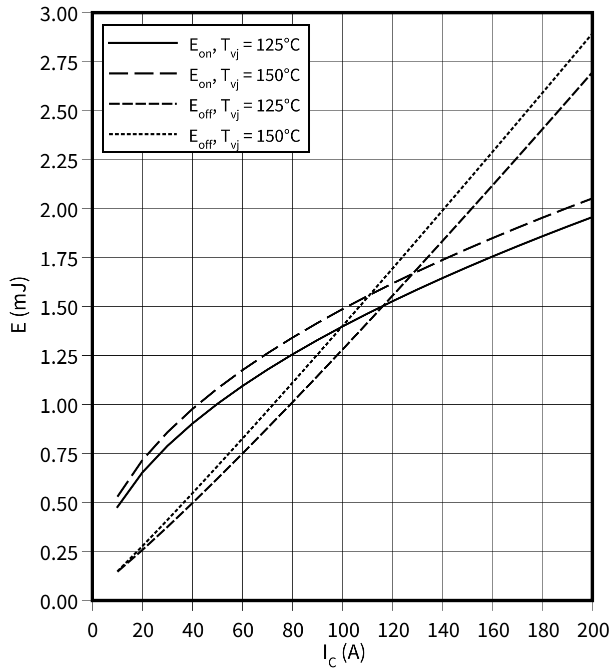
$V_{CE} = 20$ V



switching losses (typical), IGBT, T1.1 / T1.2 / T4.1 / T4.2

$E = f(I_C)$

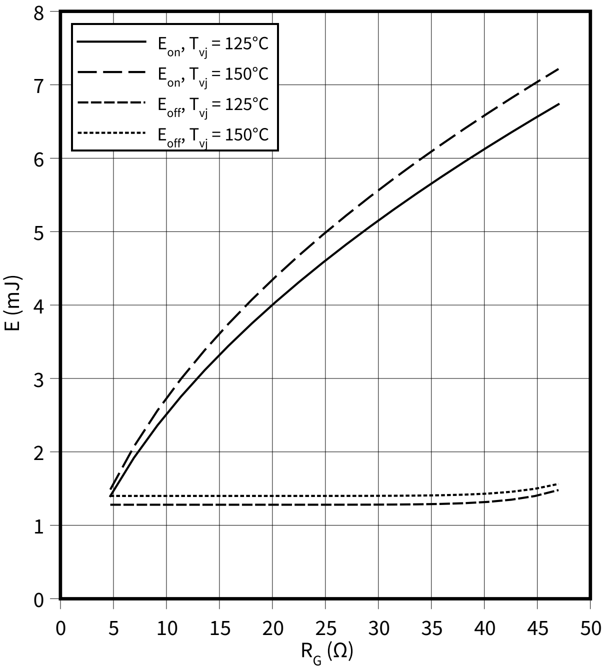
$R_{Goff} = 4.7\ \Omega$, $R_{Gon} = 4.7\ \Omega$, $V_{CE} = 300$ V, $V_{GE} = \pm 15$ V



switching losses (typical), IGBT, T1.1 / T1.2 / T4.1 / T4.2

$E = f(R_G)$

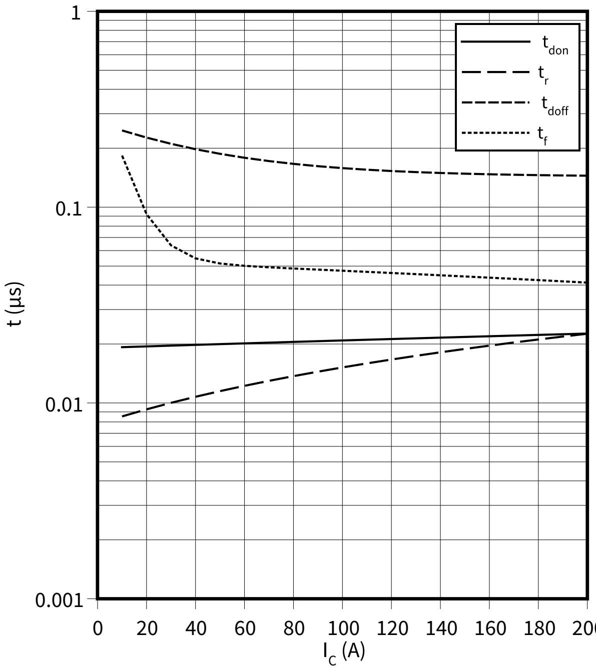
$I_C = 100$ A, $V_{CE} = 300$ V, $V_{GE} = \pm 15$ V



switching times (typical), IGBT, T1.1 / T1.2 / T4.1 / T4.2

$t = f(I_C)$

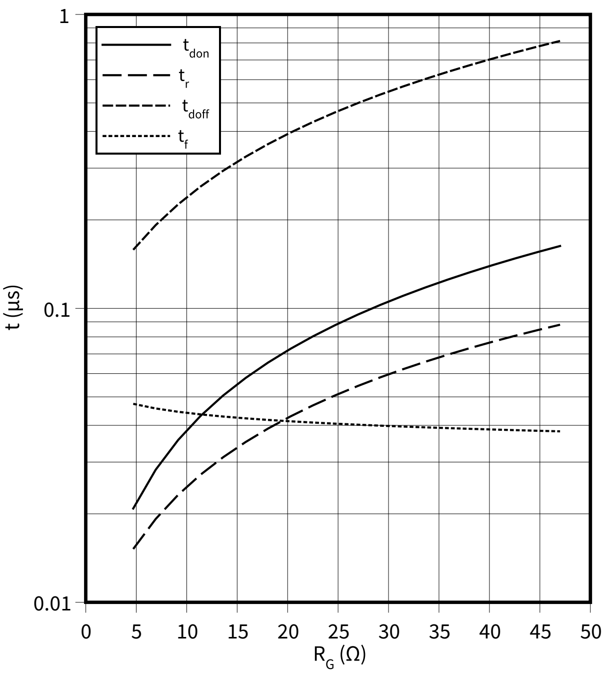
$R_{Goff} = 4.7$ Ω, $R_{Gon} = 4.7$ Ω, $V_{CE} = 300$ V, $V_{GE} = \pm 15$ V, $T_{vj} = 150$ °C



switching times (typical), IGBT, T1.1 / T1.2 / T4.1 / T4.2

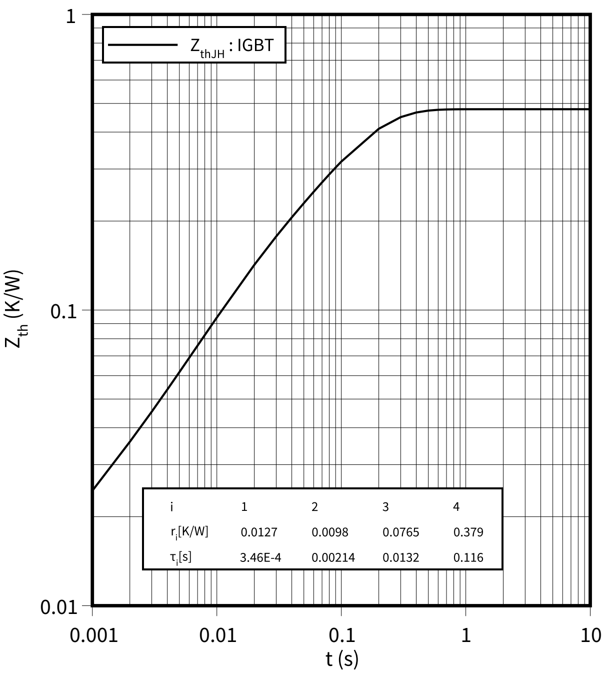
$t = f(R_G)$

$I_C = 100$ A, $V_{CE} = 300$ V, $V_{GE} = \pm 15$ V, $T_{vj} = 150$ °C



transient thermal impedance , IGBT, T1.1 / T1.2 / T4.1 / T4.2

$Z_{th} = f(t)$

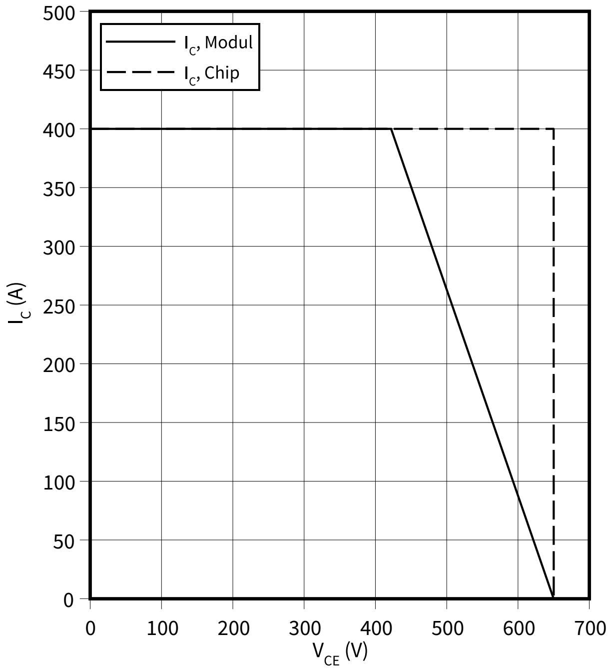


i	1	2	3	4
r_i[K/W]	0.0127	0.0098	0.0765	0.379
τ_i[s]	3.46E-4	0.00214	0.0132	0.116

reverse bias safe operating area (RBSOA), IGBT, T1.1 / T1.2 / T4.1 / T4.2

$I_C = f(V_{CE})$

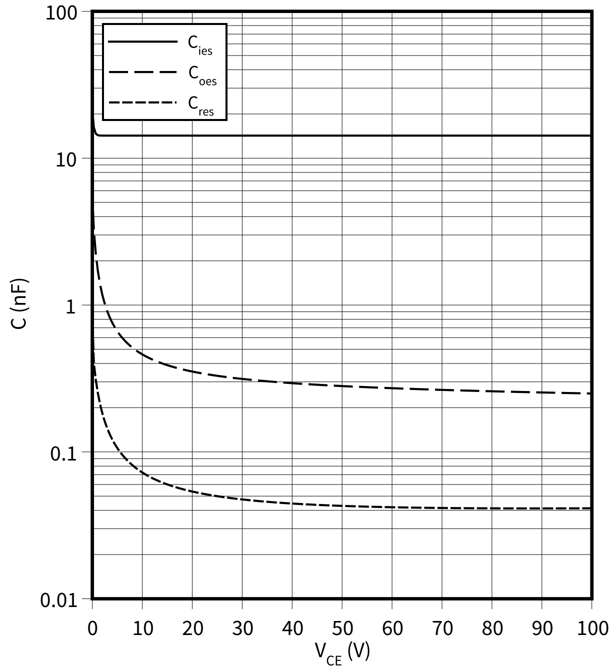
$R_{Goff} = 4.7\ \Omega$, $V_{GE} = \pm15$ V, $T_{vj} = 150$ °C



capacity characteristic (typical), IGBT, T1.1 / T1.2 / T4.1 / T4.2

$C = f(V_{CE})$

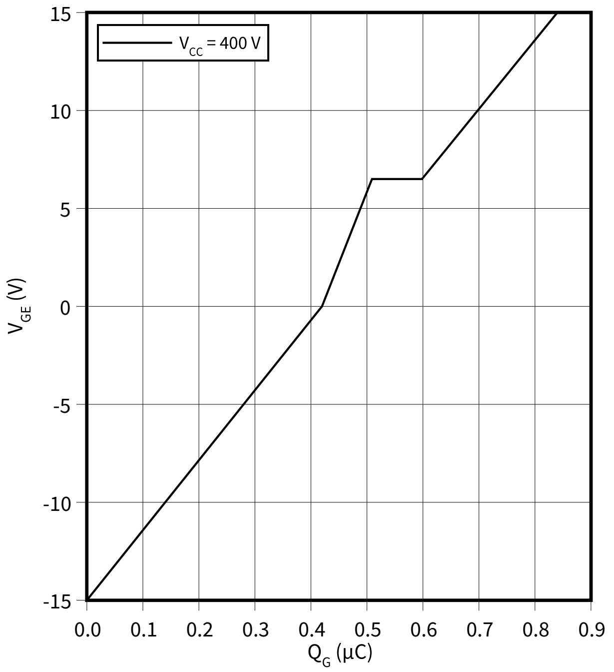
f = 100 kHz, $V_{GE} = 0$ V, $T_{vj} = 25$ °C



gate charge characteristic (typical), IGBT, T1.1 / T1.2 / T4.1 / T4.2

$V_{GE} = f(Q_G)$

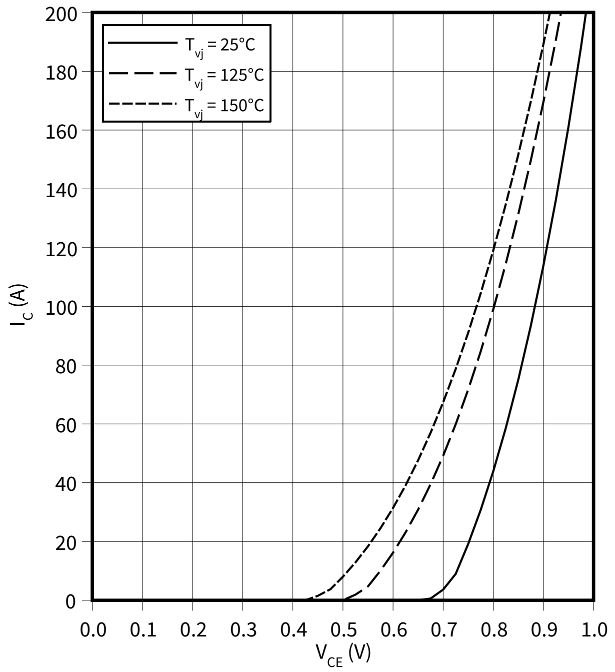
$I_C = 200$ A, $T_{vj} = 25$ °C



output characteristic (typical), IGBT, T2 / T3

$I_C = f(V_{CE})$

$V_{GE} = 15$ V

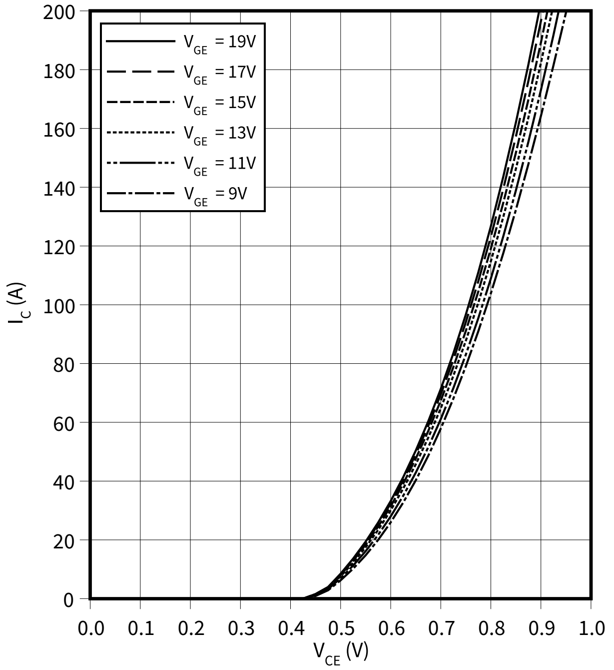


8 Characteristics diagrams

output characteristic (typical), IGBT, T2 / T3

$I_C = f(V_{CE})$

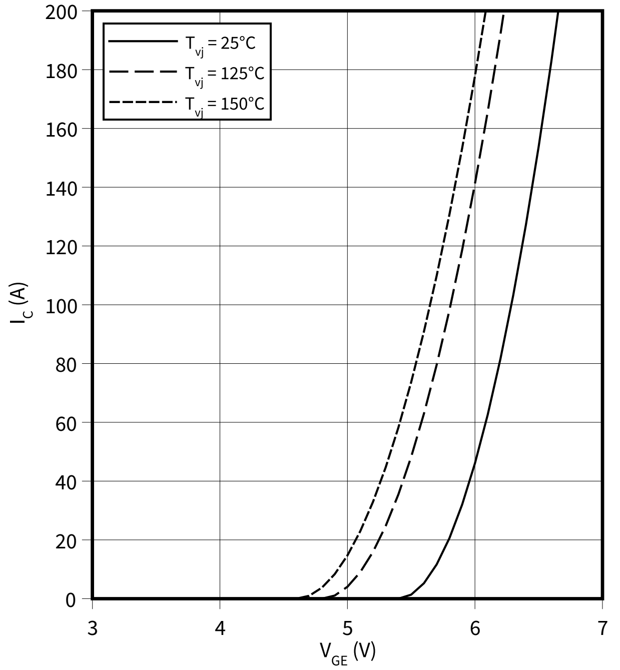
$T_{vj} = 150\ °C$



transfer characteristic (typical), IGBT, T2 / T3

$I_C = f(V_{GE})$

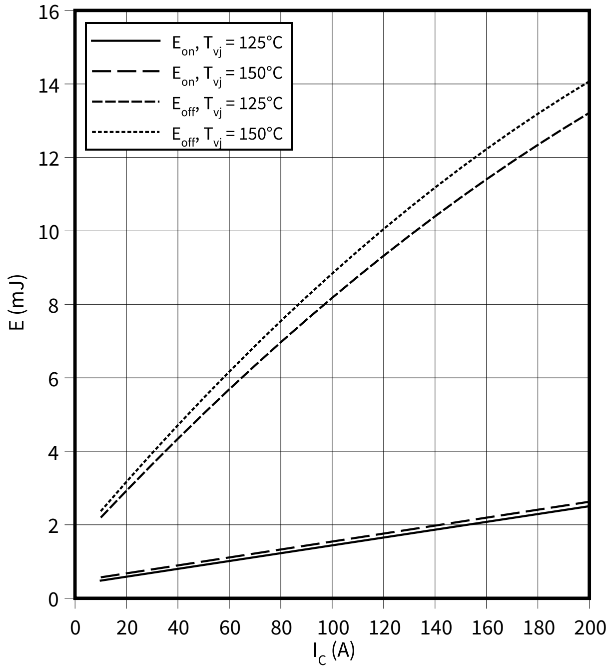
$V_{CE} = 20\ V$



switching losses (typical), IGBT, T2 / T3

$E = f(I_C)$

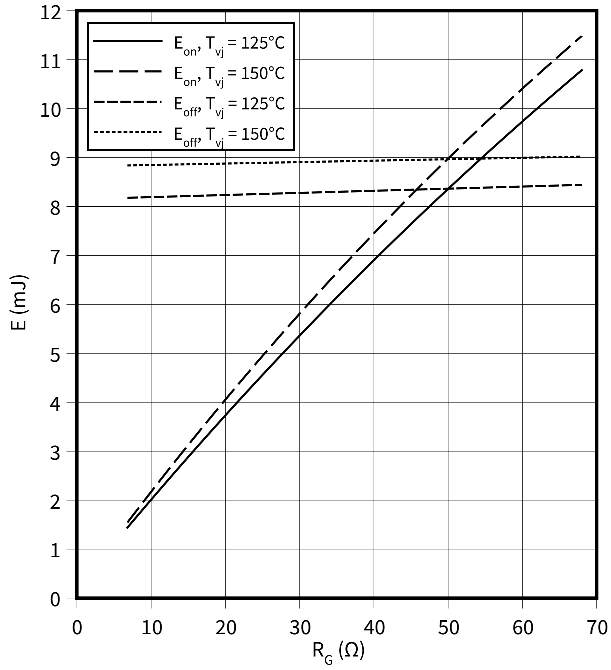
$R_{Goff} = 6.8\ \Omega$, $R_{Gon} = 6.8\ \Omega$, $V_{CE} = 300\ V$, $V_{GE} = \pm 15\ V$



switching losses (typical), IGBT, T2 / T3

$E = f(R_G)$

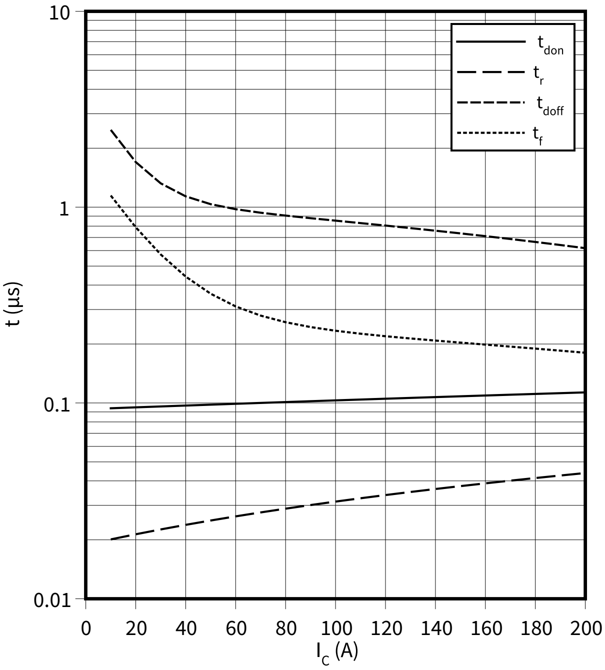
$I_C = 100\ A$, $V_{CE} = 300\ V$, $V_{GE} = \pm 15\ V$



switching times (typical), IGBT, T2 / T3

$t = f(I_C)$

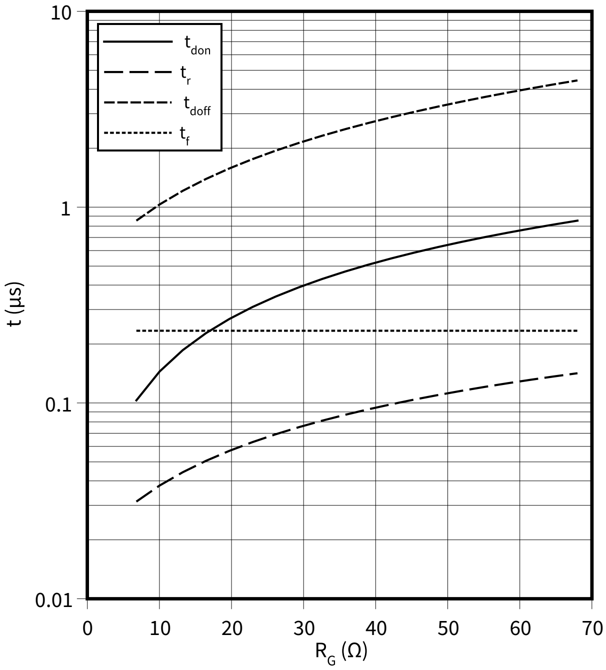
R_{Goff} = 6.8 Ω, R_{Gon} = 6.8 Ω, V_{CE} = 300 V, V_{GE} = ± 15 V, T_{vj} = 150 °C



switching times (typical), IGBT, T2 / T3

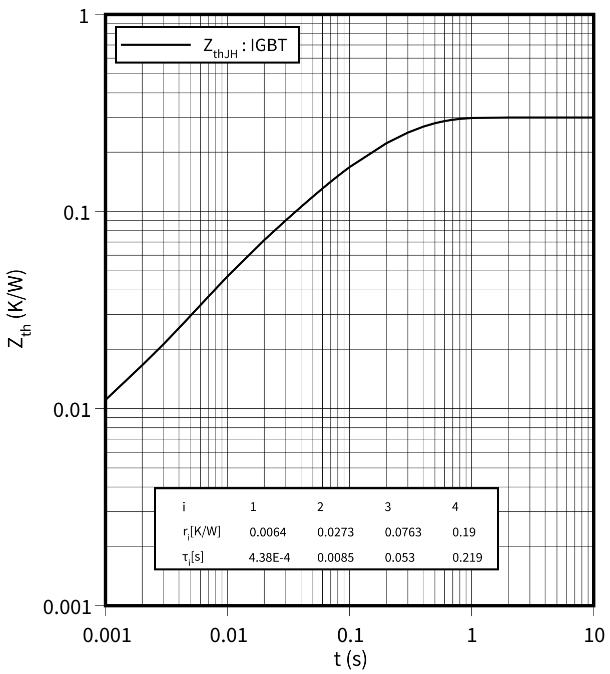
$t = f(R_G)$

I_C = 100 A, V_{CE} = 300 V, V_{GE} = ± 15 V, T_{vj} = 150 °C



transient thermal impedance , IGBT, T2 / T3

$Z_{th} = f(t)$

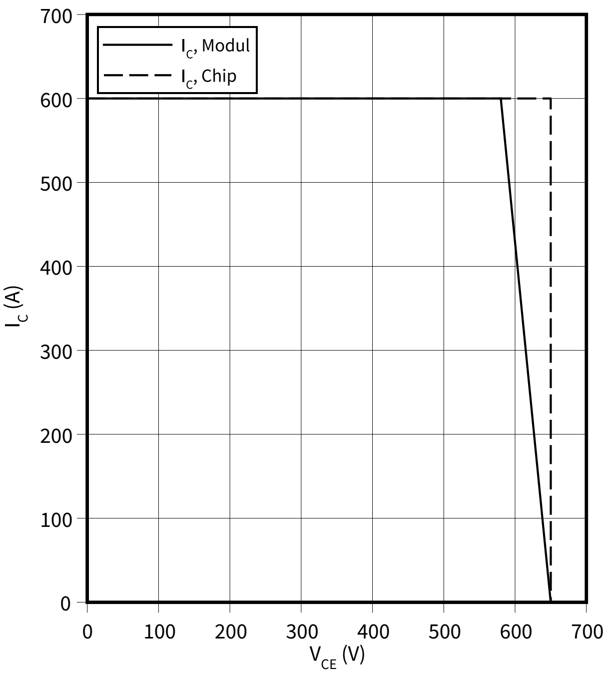


i	1	2	3	4
r_i[K/W]	0.0064	0.0273	0.0763	0.19
τ_i[s]	4.38E-4	0.0085	0.053	0.219

reverse bias safe operating area (RBSOA), IGBT, T2 / T3

$I_C = f(V_{CE})$

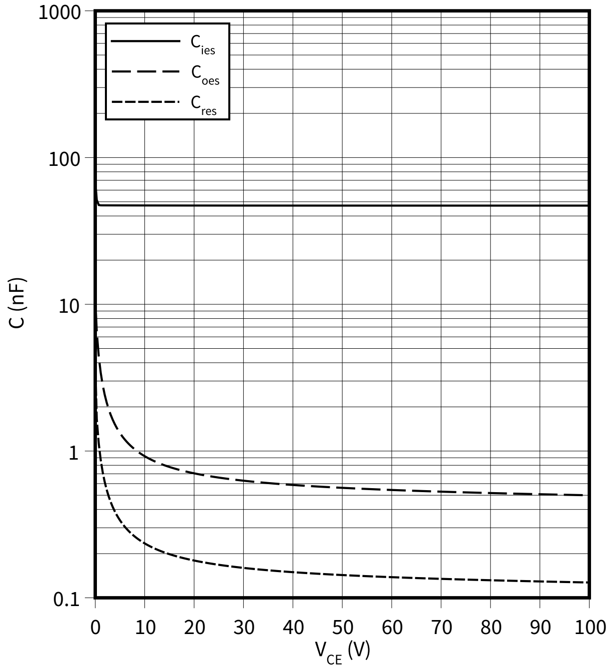
R_{Goff} = 6.8 Ω, V_{GE} = ±15 V, T_{vj} = 150 °C



capacity characteristic (typical), IGBT, T2 / T3

$C = f(V_{CE})$

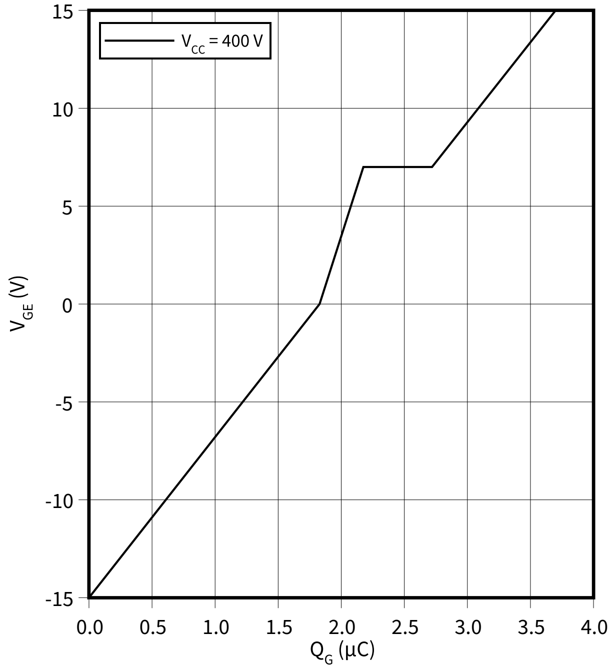
$f = 100$ kHz, $V_{GE} = 0$ V, $T_{vj} = 25$ °C



gate charge characteristic (typical), IGBT, T2 / T3

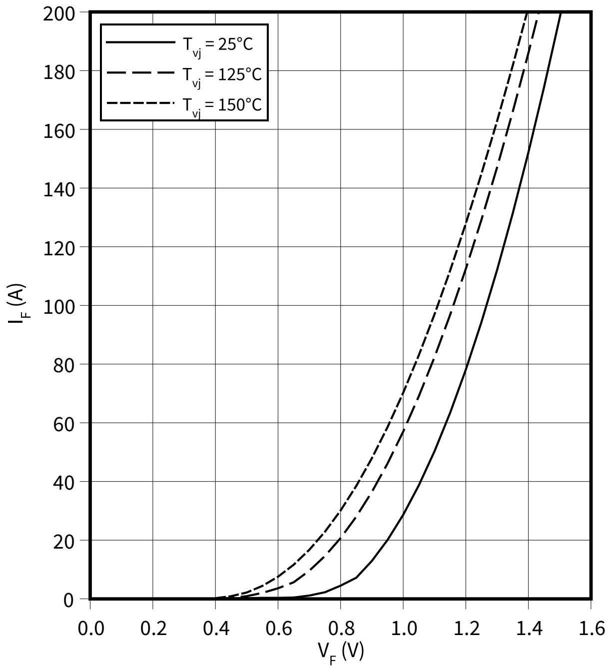
$V_{GE} = f(Q_G)$

$I_C = 200$ A, $T_{vj} = 25$ °C



forward characteristic (typical), Diode, D1 / D4

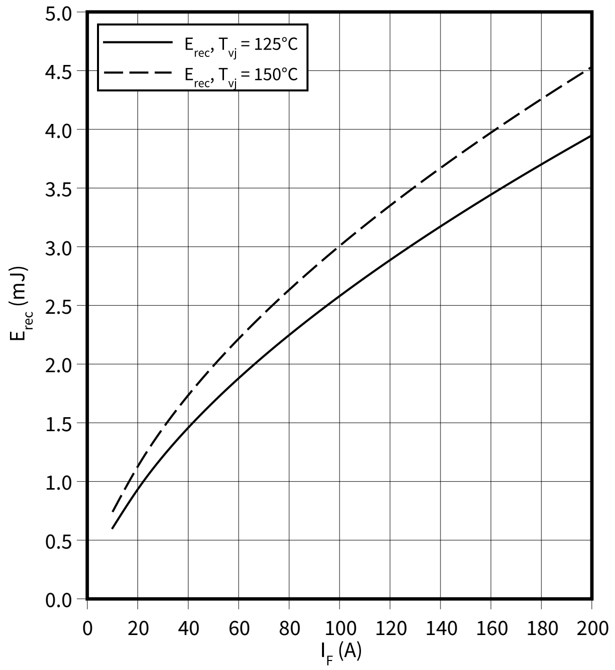
$I_F = f(V_F)$



switching losses (typical), Diode, D1 / D4

$E_{rec} = f(I_F)$

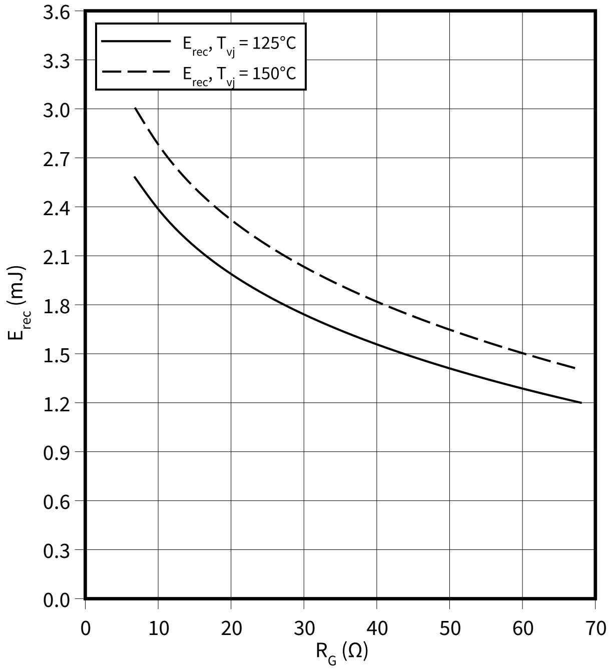
$R_{Gon} = 6.8\ \Omega$, $V_{CE} = 300$ V



switching losses (typical), Diode, D1 / D4

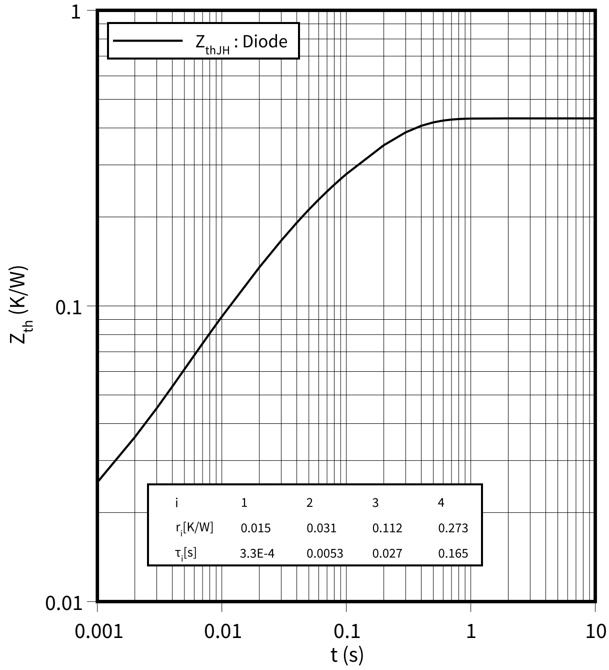
$E_{rec} = f(R_G)$

$V_{CE} = 300\ V,\ I_F = 100\ A$



transient thermal impedance , Diode, D1 / D4

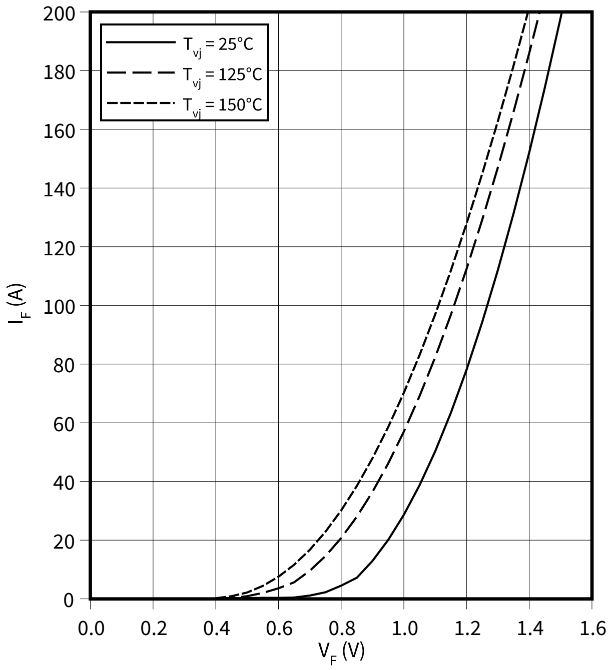
$Z_{th} = f(t)$



i	1	2	3	4
r_i[K/W]	0.015	0.031	0.112	0.273
τ_i[s]	3.3E-4	0.0053	0.027	0.165

forward characteristic (typical), Diode, D2 / D3

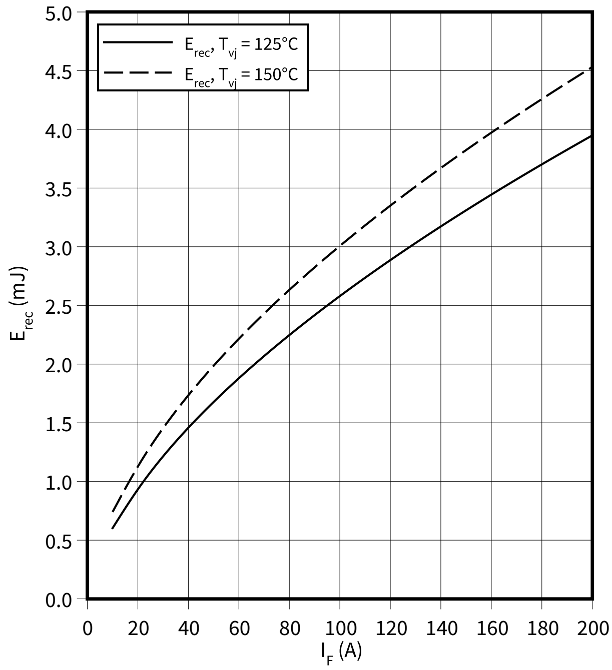
$I_F = f(V_F)$



switching losses (typical), Diode, D2 / D3

$E_{rec} = f(I_F)$

$R_{Gon} = 6.8\ \Omega,\ V_{CE} = 300\ V$

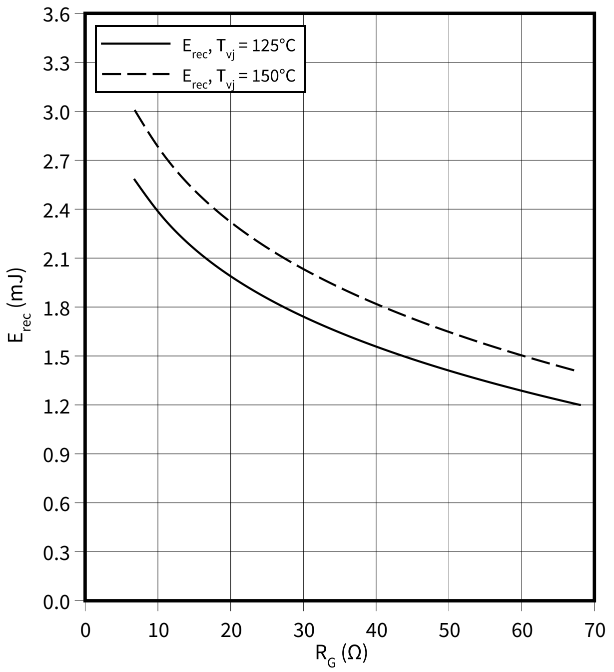


8 Characteristics diagrams

switching losses (typical), Diode, D2 / D3

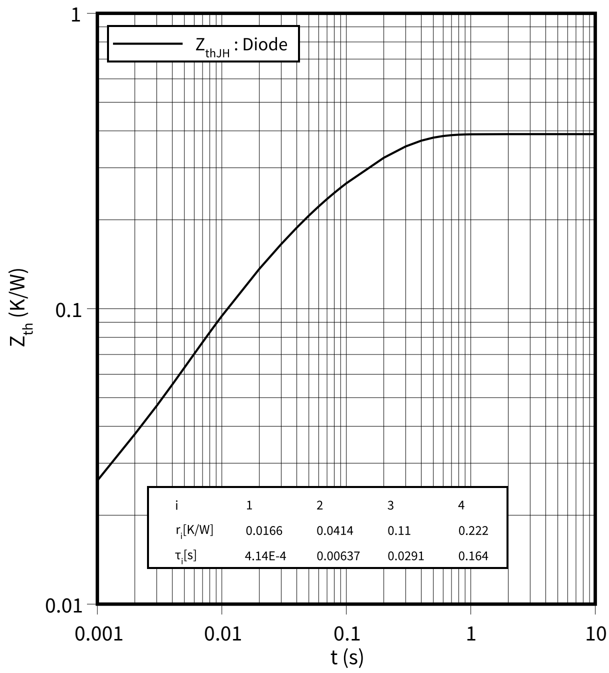
$E_{rec} = f(R_G)$

$V_{CE} = 300$ V, $I_F = 100$ A



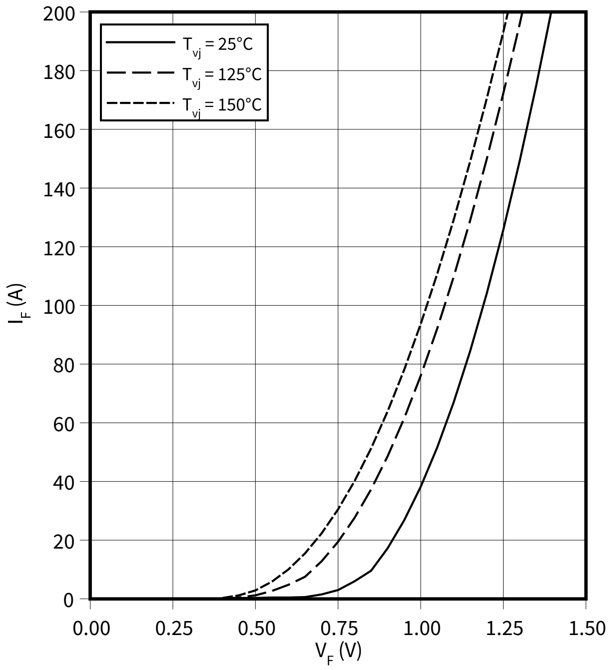
transient thermal impedance , Diode, D2 / D3

$Z_{th} = f(t)$



forward characteristic of (typical), Diode, D5 / D6

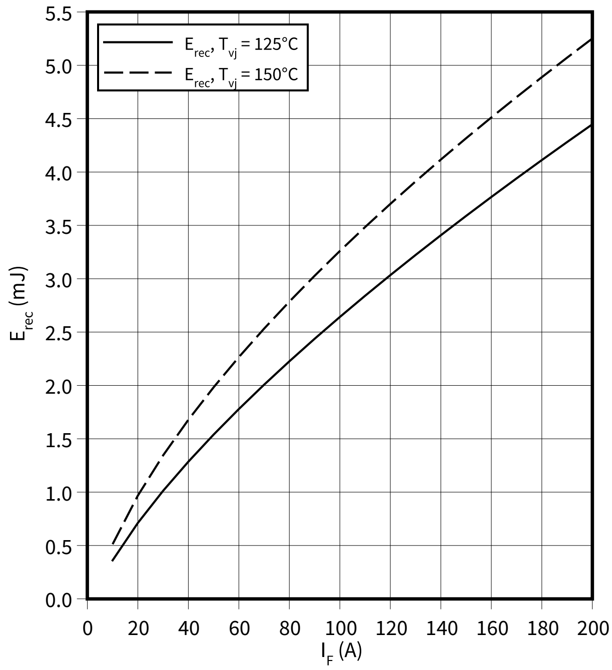
$I_F = f(V_F)$



switching losses (typical), Diode, D5 / D6

$E_{rec} = f(I_F)$

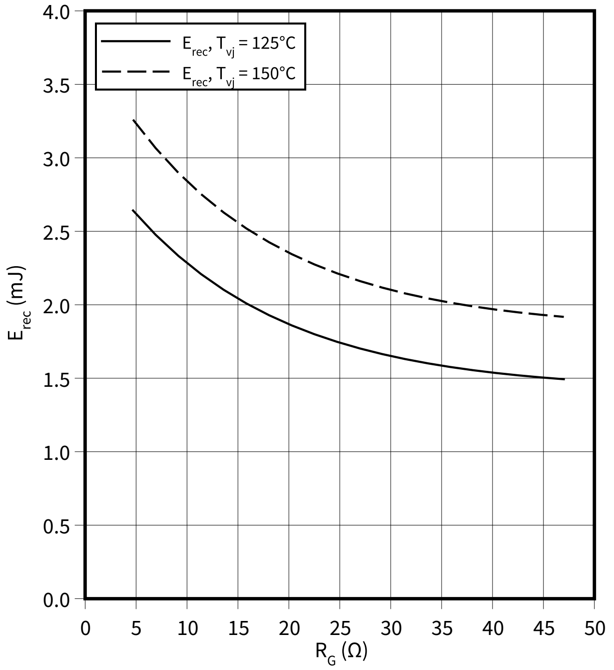
$R_{Gon} = 4.7\ \Omega$, $V_{CE} = 300$ V



switching losses (typical), Diode, D5 / D6

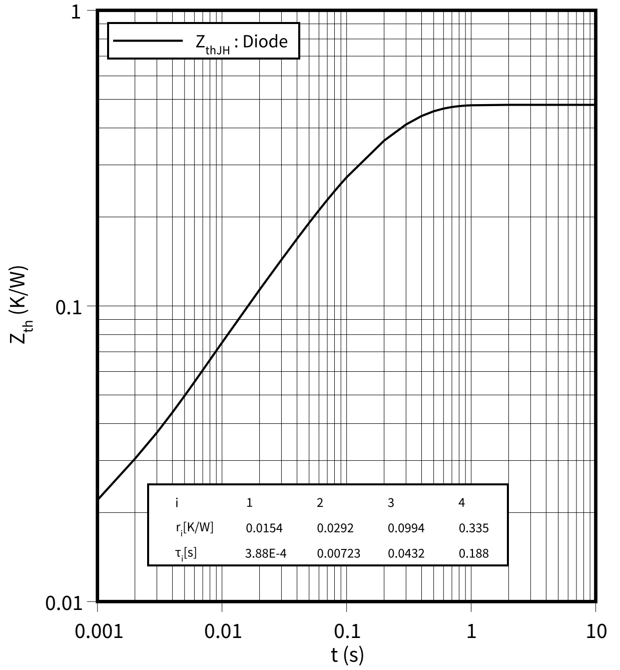
$E_{rec} = f(R_G)$

$V_{CE} = 300\ V$, $I_F = 100\ A$



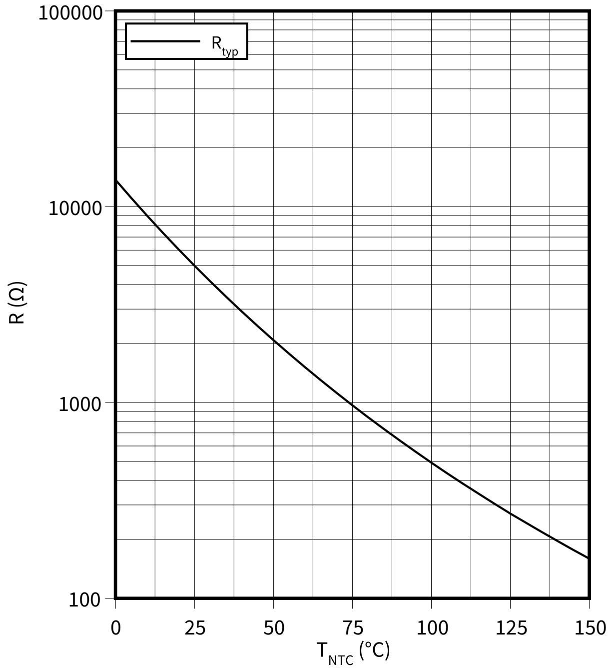
transient thermal impedance , Diode, D5 / D6

$Z_{th} = f(t)$



temperature characteristic (typical), NTC-Thermistor

$R = f(T_{NTC})$



9 Circuit diagram

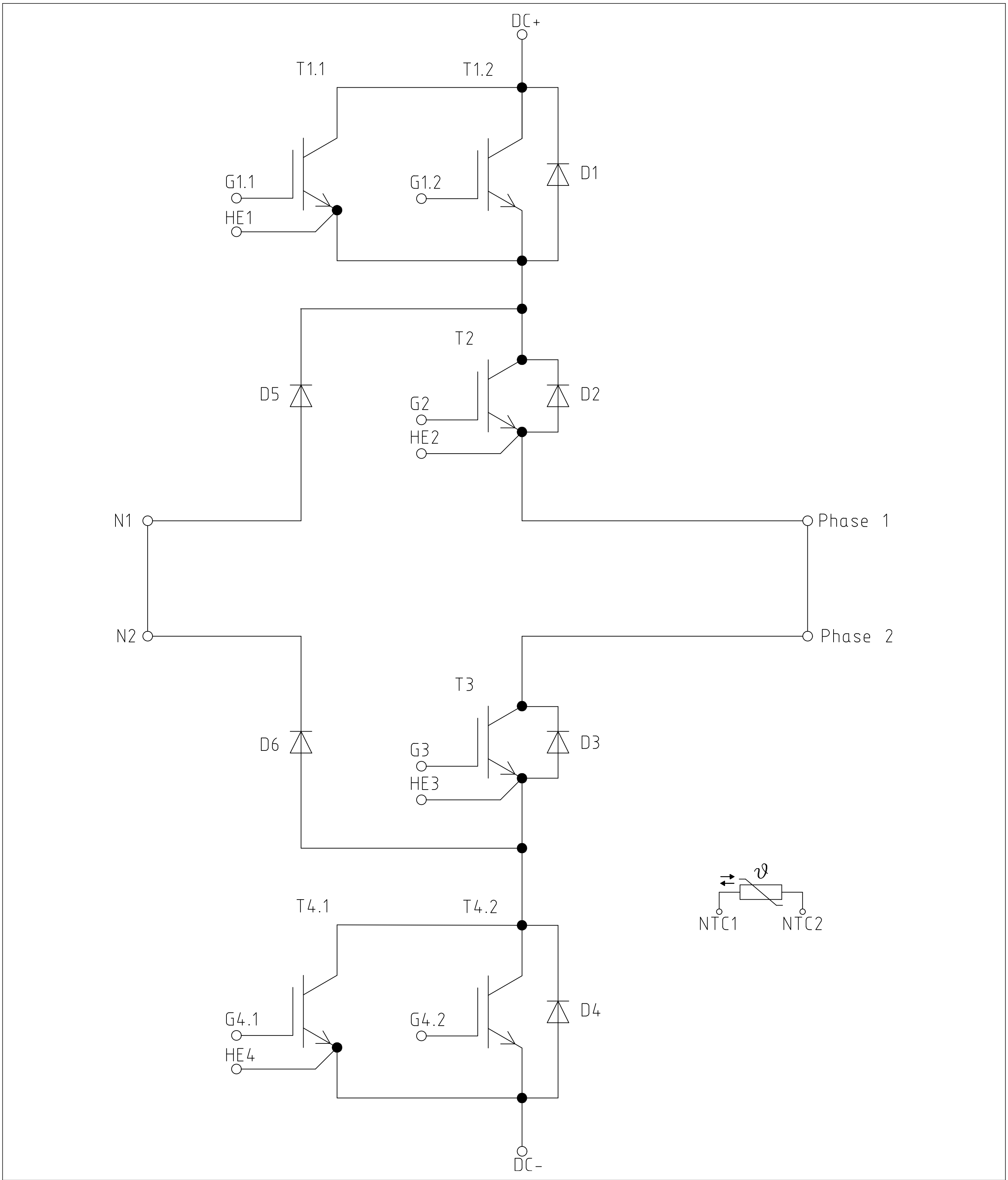


Figure 2

10 Package outlines

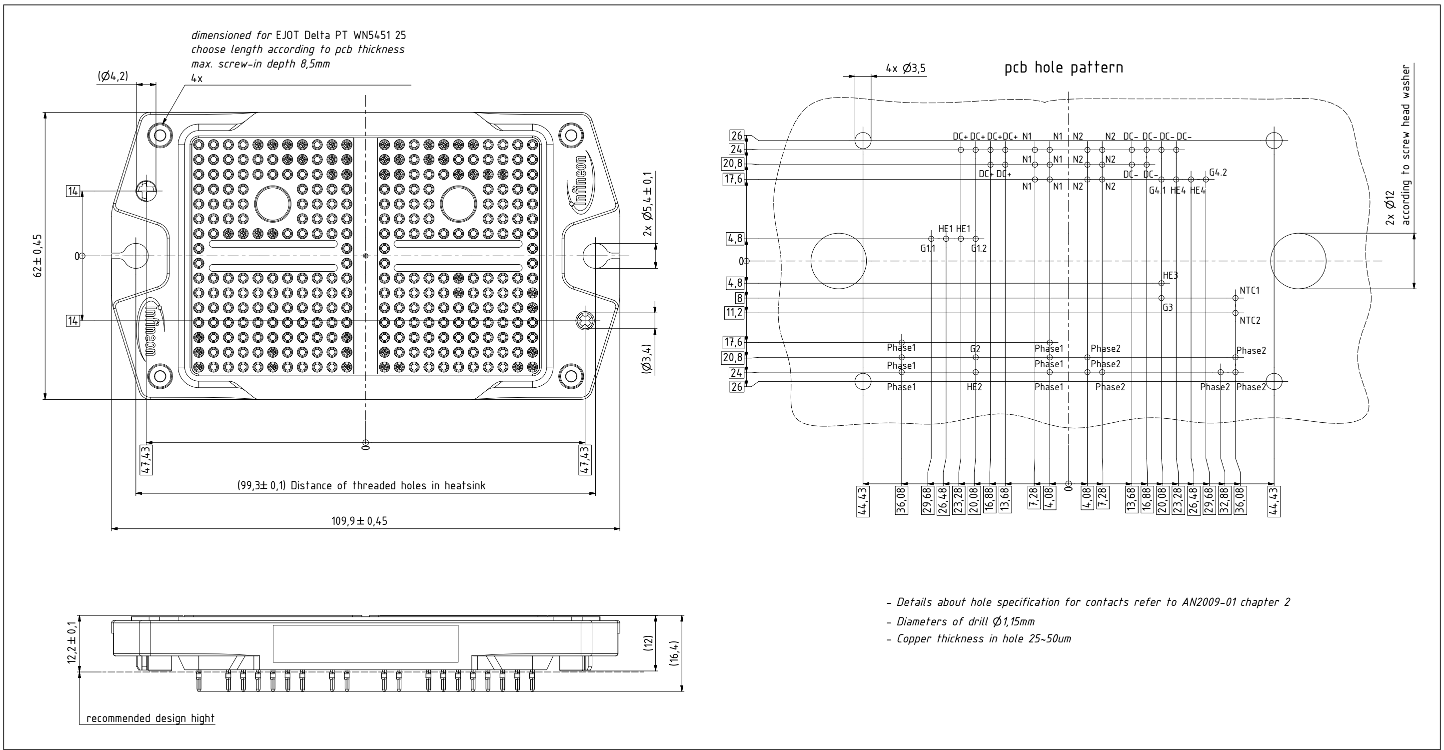


Figure 3

11 Module label code

Module label code		
Code format	Data Matrix	Barcode Code128
Encoding	ASCII text	Code Set A
Symbol size	16x16	23 digits
Standard	IEC24720 and IEC16022	IEC8859-1

Code content	*Content*	*Digit*	*Example*
	Module serial number	1 – 5	71549
	Module material number	6 - 11	142846
	Production order number	12 - 19	55054991
	Date code (production year)	20 – 21	15
	Date code (production week)	22 – 23	30
Example	71549142846550549911530		71549142846550549911530

Figure 4

Revision history

Document revision	Date of release	Description of changes
0.10	2021-04-28	Target datasheet
1.00	2021-06-25	Final datasheet

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