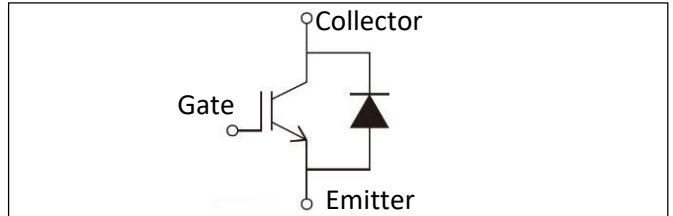


# GSA75AA120



Same package as the product in this photo.

$V_{CES} = 1200V$   
 $I_C = 75A$



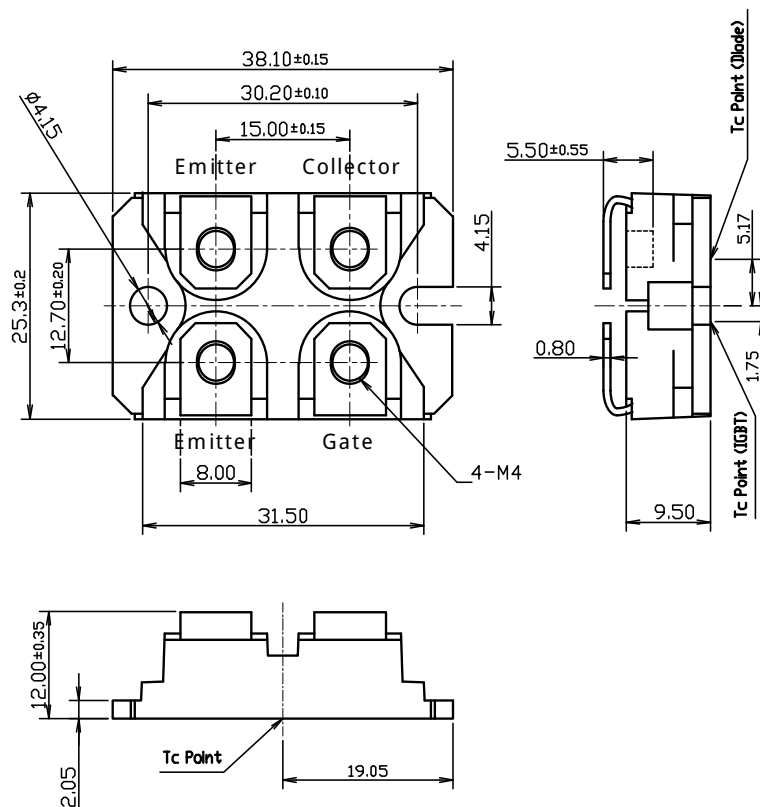
■ IGBT

### Advantages

- High Frequency Switching to 40~70kHz
- Compatible package with SOT-227
- Can be small equipment thanks to small package
- Fully isolated package Viso=2500V
- EU RoHS compliant
- UL approved File No.E76102

### Applications

- Welding power supply, Induction heating power supply, Switching power supply, UPS

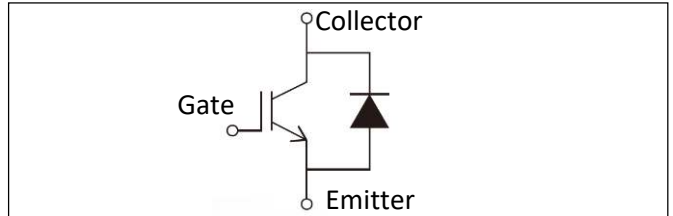


# GSA75AA120



Same package as the product in this photo.

$V_{CES} = 1200V$   
 $I_C = 75A$



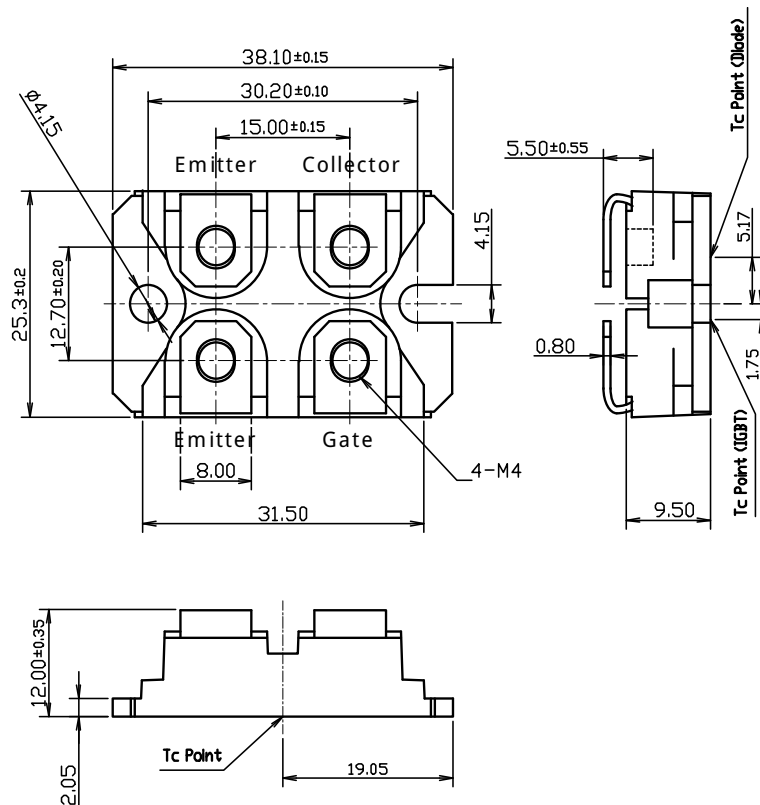
■ IGBT

### Advantages

- 高周波スイッチング用途 (40~70kHz)
- SOT-227 標準パッケージ
- 装置の小型化に貢献
- 絶縁耐圧  $V_{ISO}=2500V$
- EU RoHS 対応
- UL approved File No.E76102

### Applications

- 溶接機、切断機、誘導加熱用電源、スイッチング電源、無停電電源装置 (UPS)



■ Maximum Ratings ( $T_j=25^\circ\text{C}$  unless otherwise specified)

Item	Symbol	Unit	Ratings	Conditions	
Collector - Emitter voltage	$V_{CES}$	V	1200	$V_{GE} = 0\text{ V}$	
Gate - Emitter Voltage	$V_{GES}$	V	$\pm 20$	$V_{CE} = 0\text{ V}$	
Collector Current	DC	$I_C$	A	75	$V_{GE} = 15\text{ V}$ , DC, $T_C = 69^\circ\text{C}$
	Pulse	$I_{CP}$	A	150	$V_{GE} = 15\text{ V}$ , Pulse(1ms), $T_C = 150^\circ\text{C}$
Reverse Collector Current	$-I_C$	A	60	$T_C = 67^\circ\text{C}$	
Total Power Dissipation	IGBT	$P_T$	W	500	$T_C = 25^\circ\text{C}$
	Diode			250	$T_C = 25^\circ\text{C}$
Junction Temperature	$T_j$	$^\circ\text{C}$	-40~+150		
Storage Temperature	$T_{stg}$	$^\circ\text{C}$	-40~+125		
Isolation Voltage	$V_{ISO}$	V	2500	A.C., RMS, 1 minute	

■ Electrical Characteristics ( $T_j=25^\circ\text{C}$  unless otherwise specified)

Item	Symbol	Unit	Ratings			Conditions
			Min.	Typ.	Max.	
Gate - Emitter Leakage Current	$I_{GES}$	$\mu\text{A}$			1.0	$V_{GE} = \pm 20\text{ V}$ , $V_{CE} = 0\text{ V}$
Collector - Emitter Leakage Current	$I_{CES}$	$\mu\text{A}$		300	100	$V_{CE} = 1200\text{ V}$ , $V_{GE} = 0\text{ V}$
					2000	$V_{CE} = 1200\text{ V}$ , $V_{GE} = 0\text{ V}$ , $T_j = 125^\circ\text{C}$
Gate - Emitter Threshold Voltage	$V_{GE(th)}$	V	4.9	5.6	6.3	$V_{CE} = 10\text{ V}$ , $I_C = 7.5\text{ mA}$
Collector - Emitter Saturation Voltage	$V_{CE(sat)}$	V	2.70	3.30	3.90	$I_C = 75\text{ A}$ , $V_{GE} = 15\text{ V}$
				4.20	$I_C = 75\text{ A}$ , $V_{GE} = 15\text{ V}$ , $T_j = 125^\circ\text{C}$	
Emitter - Collector Voltage	$V_{ECS}$	V	3.50	4.40	5.10	$-I_C = 75\text{ A}$ , $V_{GE} = 0\text{ V}$
				2.90	$-I_C = 75\text{ A}$ , $V_{GE} = 0\text{ V}$ , $T_j = 125^\circ\text{C}$	
Input Capacitance	$C_{es}$	nF		5.50		
Output Capacitance	$C_{oes}$	nF		0.80	$V_{CE} = 10\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$	
Reverse Transfer Capacitance	$C_{res}$	nF		0.30		

■ Thermal Characteristics ( $T_j=25^\circ\text{C}$  unless otherwise specified)

Item	Symbol	Unit	Ratings			Conditions
			Min.	Typ.	Max.	
Thermal Resistance	IGBT - Case	$R_{th(j-c)}$	$^\circ\text{C/W}$		0.25	
	FRD - Case				0.50	
Case-to-Heat sink Thermal Resistance	$R_{th(c-f)}$	$^\circ\text{C/W}$		0.10	Per module Thermal conductivity (Si grease) $= 9 \times 10^{-3}\text{ W/cm}\cdot^\circ\text{C}$	

■ Mechanical Characteristics ( $T_j=25^\circ\text{C}$  unless otherwise specified)

Item	Symbol	Unit	Ratings	Conditions	
Weight	-	g	30	Typical value	
Mounting Torque	Mounting M4	-	N·m	1.5	Recommended value : 1.0~1.4
	Terminals M4			1.5	Recommended value : 1.0~1.4

■ Switching Characteristics (T<sub>j</sub>=25°C unless otherwise specified)

Item	Symbol	Unit	Ratings			Conditions
			Min.	Typ.	Max.	
Total Gate Charge	Q <sub>g</sub>	nC		260		I <sub>C</sub> = 75 A, V <sub>GE</sub> /-V <sub>GE</sub> = +15/0 V V <sub>CE</sub> = 600 V *1
Gate - Emitter Charge	Q <sub>ge</sub>	nC		42		
Gate - Collector Charge	Q <sub>gc</sub>	nC		126		
Turn - On Switching Loss	E <sub>on</sub>	mJ		2.2		I <sub>C</sub> = 75 A, V <sub>GE</sub> /-V <sub>GE</sub> = +15/0 V V <sub>CE</sub> = 600 V, R <sub>G</sub> = 4.7 Ω *1
Turn - Off Switching Loss	E <sub>off</sub>	mJ		2.8		
Total Switching Loss	E <sub>tot</sub>	mJ		5.0		
Turn - On Delay Time	t <sub>d(on)</sub>	ns		70		
Rise Time	t <sub>r</sub>	ns		45		
Turn - Off Delay Time	t <sub>d(off)</sub>	ns		220	600	
Fall Time	t <sub>f</sub>	ns		55	200	I <sub>C</sub> = 75 A, V <sub>GE</sub> /-V <sub>GE</sub> = +15/0 V V <sub>CE</sub> = 600 V, R <sub>G</sub> = 4.7 Ω, T <sub>j</sub> = 125 °C *1
Turn - On Switching Loss	E <sub>on</sub>	mJ		3.9		
Turn - Off Switching Loss	E <sub>off</sub>	mJ		4.6		
Total Switching Loss	E <sub>tot</sub>	mJ		8.5		
Turn - On Delay Time	t <sub>d(on)</sub>	ns		70		
Rise Time	t <sub>r</sub>	ns		50		
Turn - Off Delay Time	t <sub>d(off)</sub>	ns		250		-I <sub>C</sub> (I <sub>F</sub> ) = 75 A, V <sub>CE</sub> (V <sub>R</sub> ) = 600 V di/dt = 1800 A/μs *1
Fall Time	t <sub>f</sub>	ns		75		
Reverse Recovery Time	t <sub>rr</sub>	ns		75		
Peak Reverse Recovery Current	i <sub>rr</sub>	A		80		
Reverse Recovery Charge	Q <sub>rr</sub>	μC		3.2		
Reverse Recovery Time	t <sub>rr</sub>	ns		125		
Peak Reverse Recovery Current	i <sub>rr</sub>	A		110		
Reverse Recovery Charge	Q <sub>rr</sub>	μC		9.0		

\*1 : Please refer Fig.1 in test circuit.

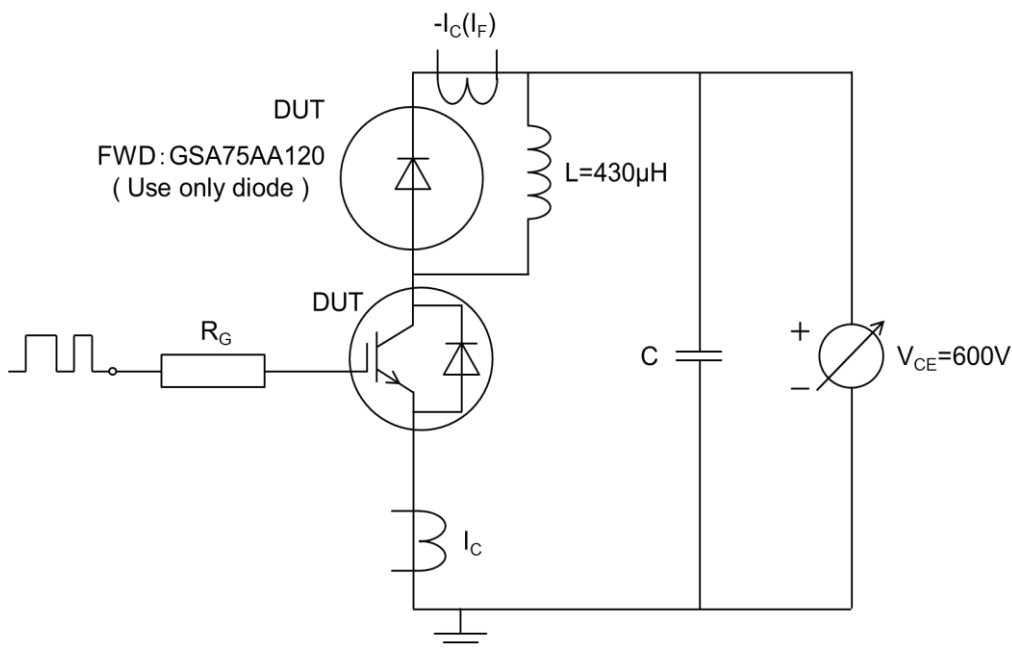


Fig.1 Inductive load switching time test circuit

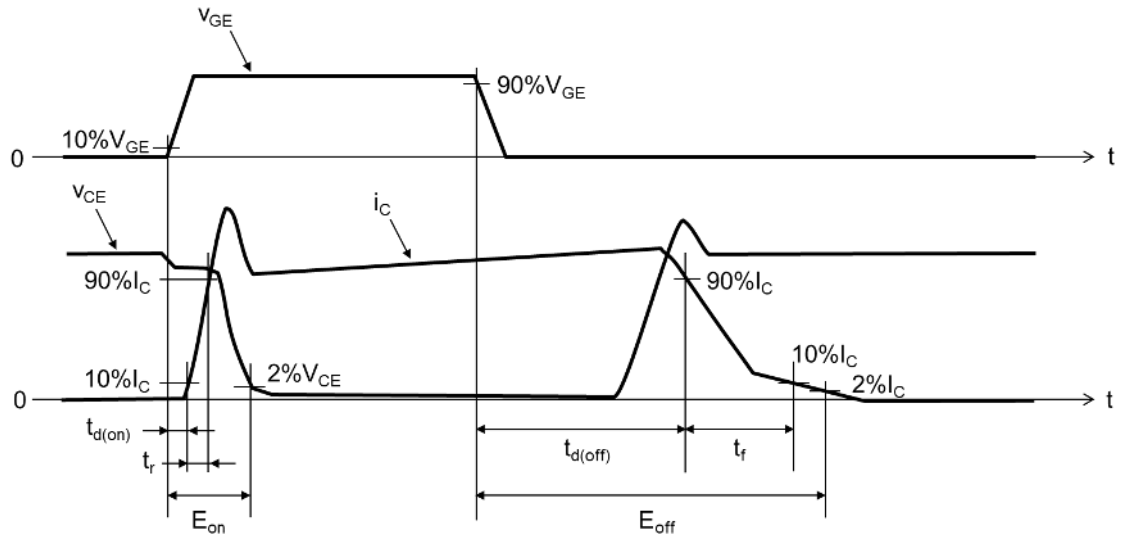


Fig.2 Switching waveform at the time of Inductive load

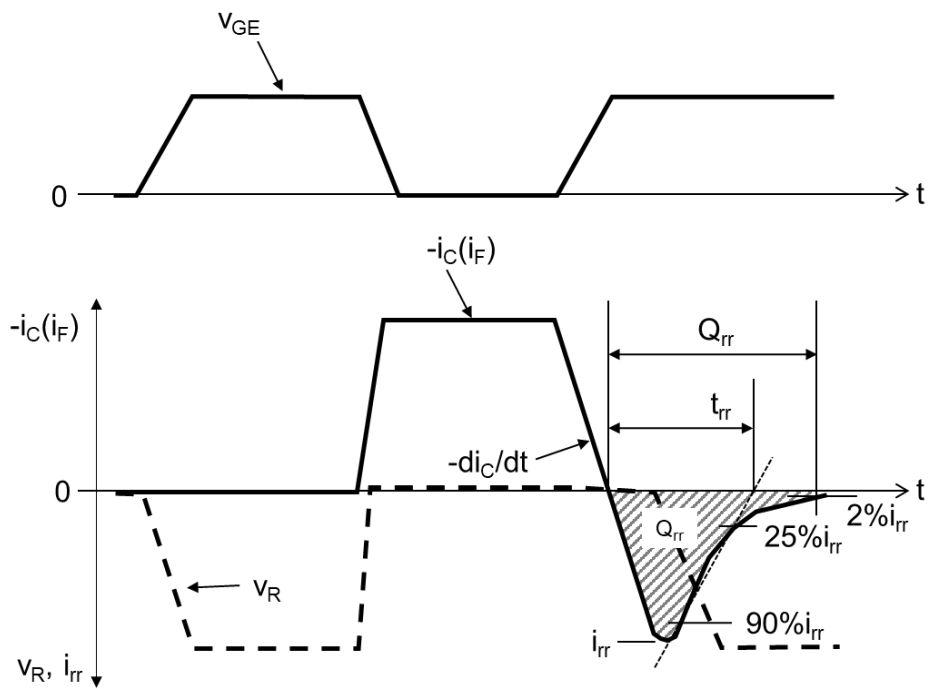
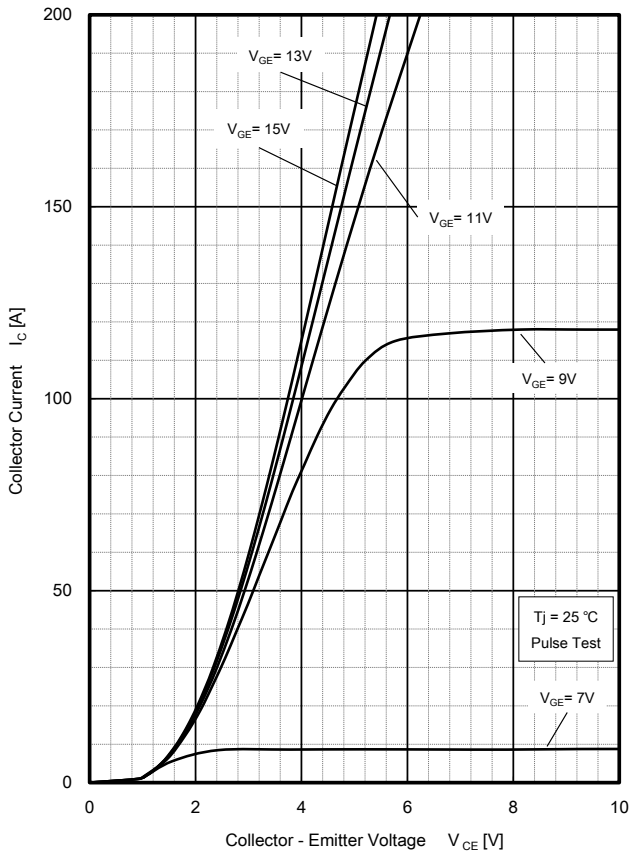
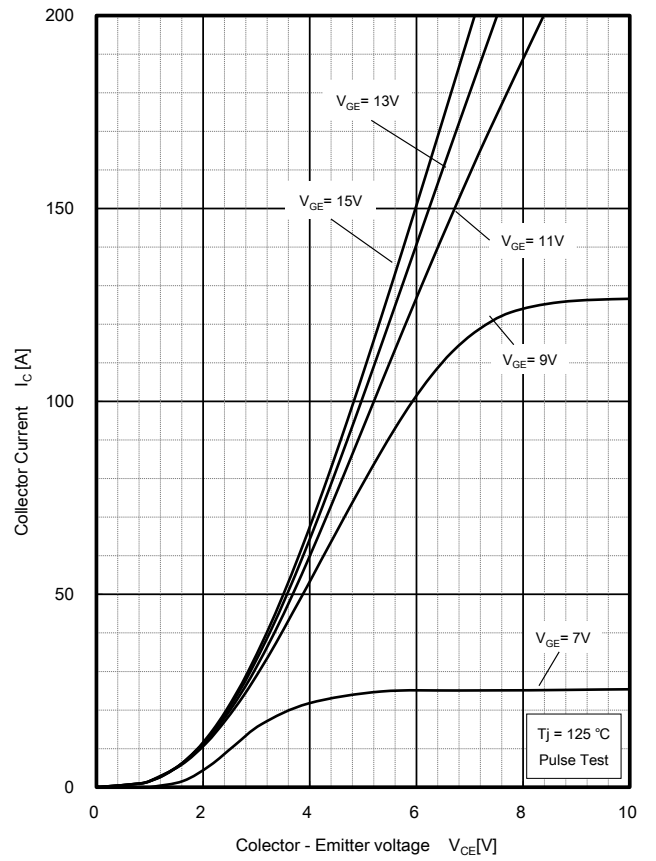


Fig.3 Reverse recovery waveform at the time of Inductive load

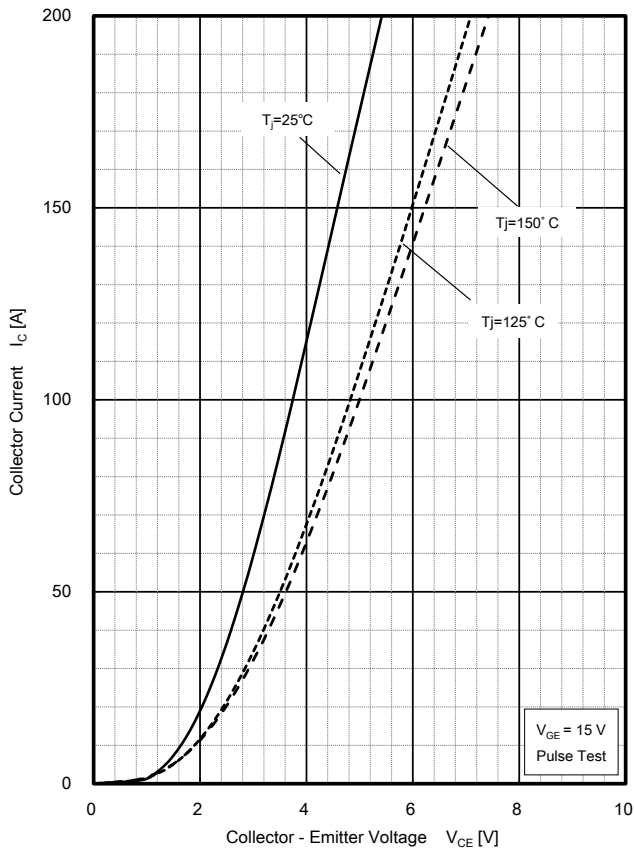
Output Characteristics (Typ.)



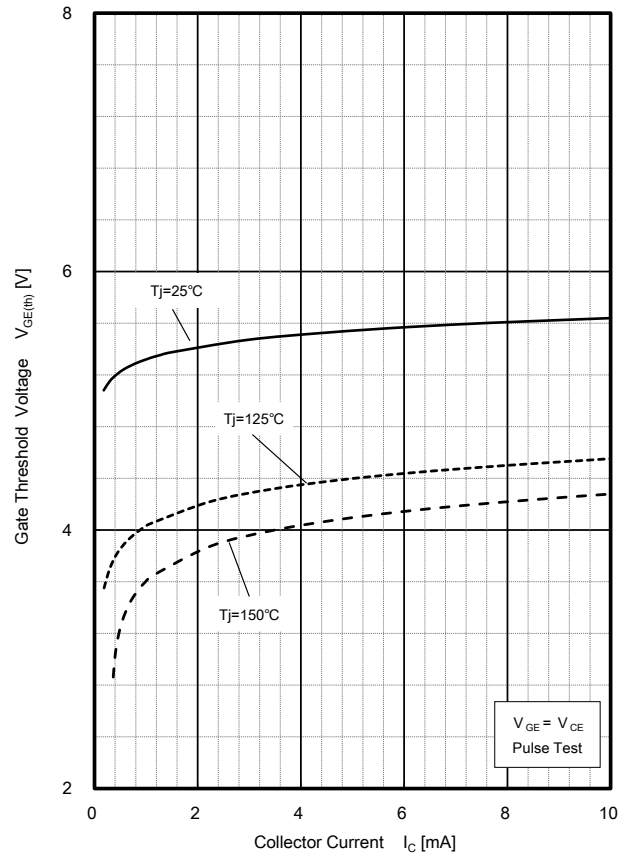
Output Characteristics (Typ.)



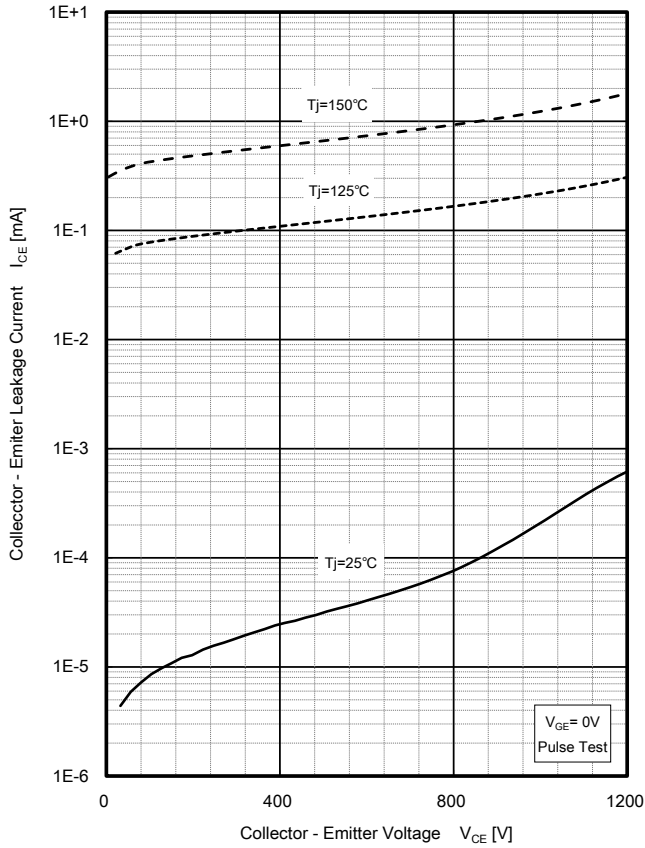
Output Characteristics (Typ.)



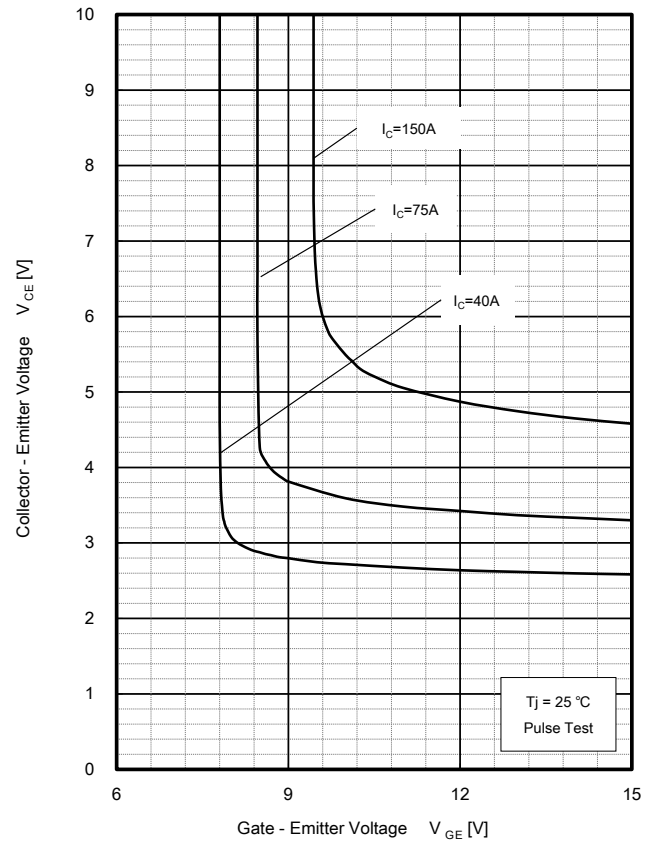
Gate Threshold Voltage Characteristics (Typ.)



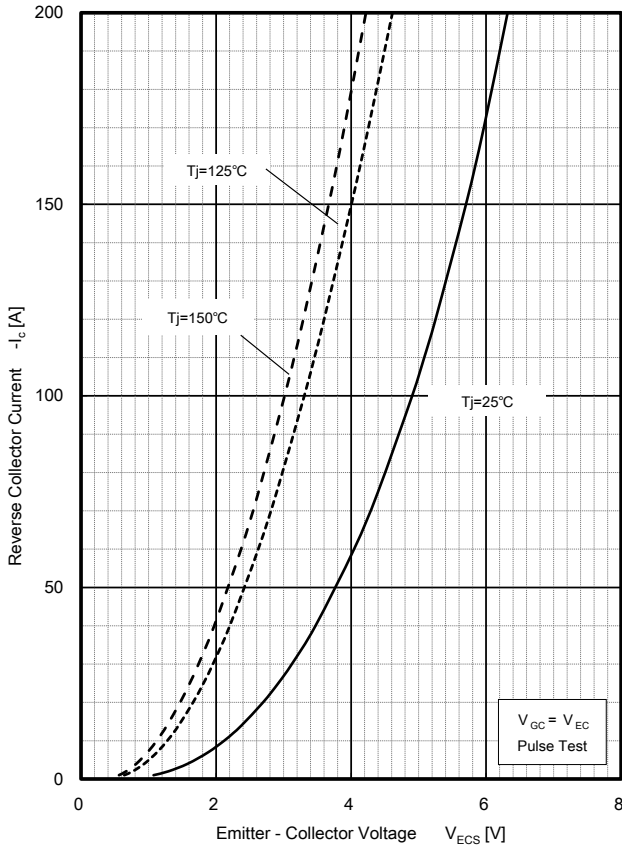
Collector - Emitter Leakage Current Characteristics (typ.)



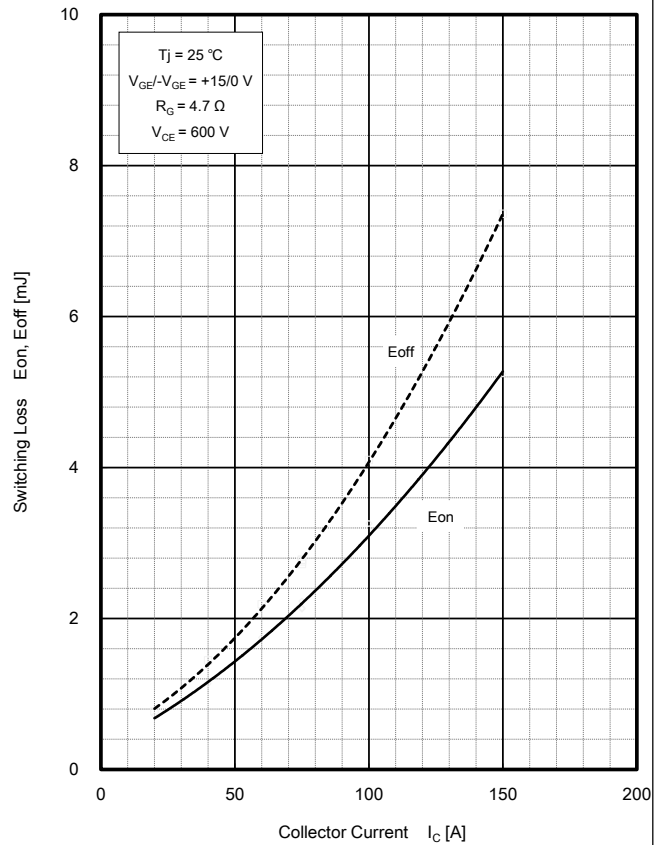
Collector - Emitter Saturation Voltage Characteristics (Typ.)



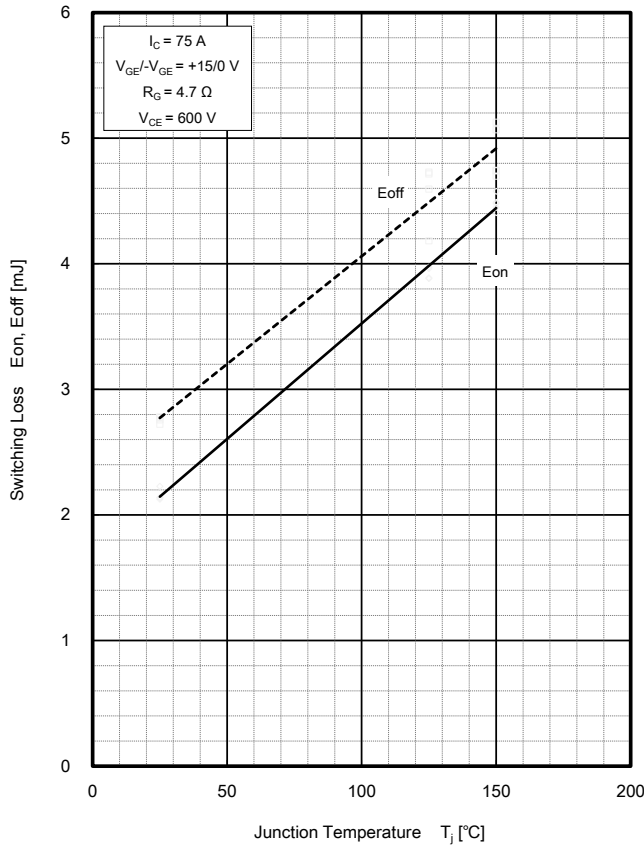
Reverse Collector Current Characteristics (Typ.)



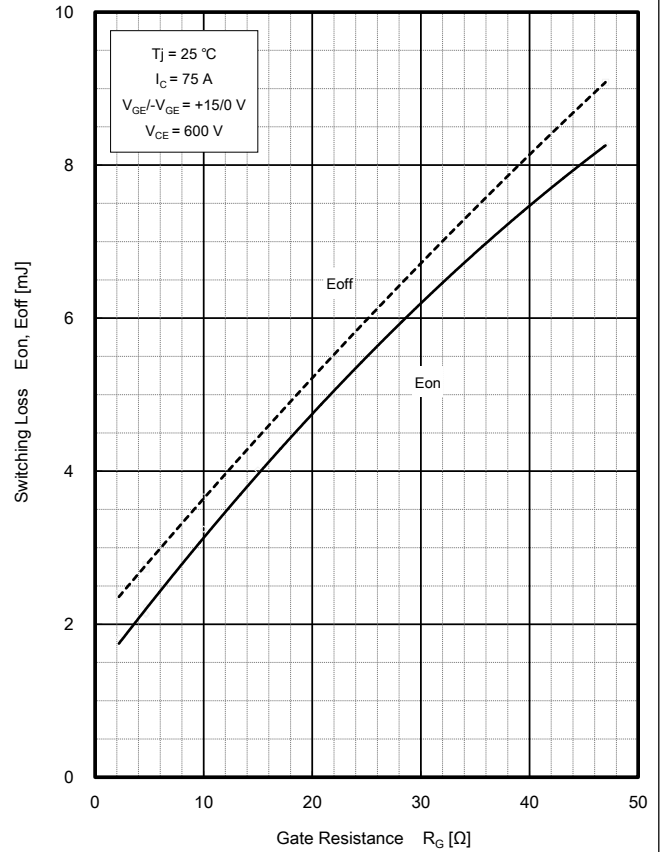
Switching Characteristics (Typ.)



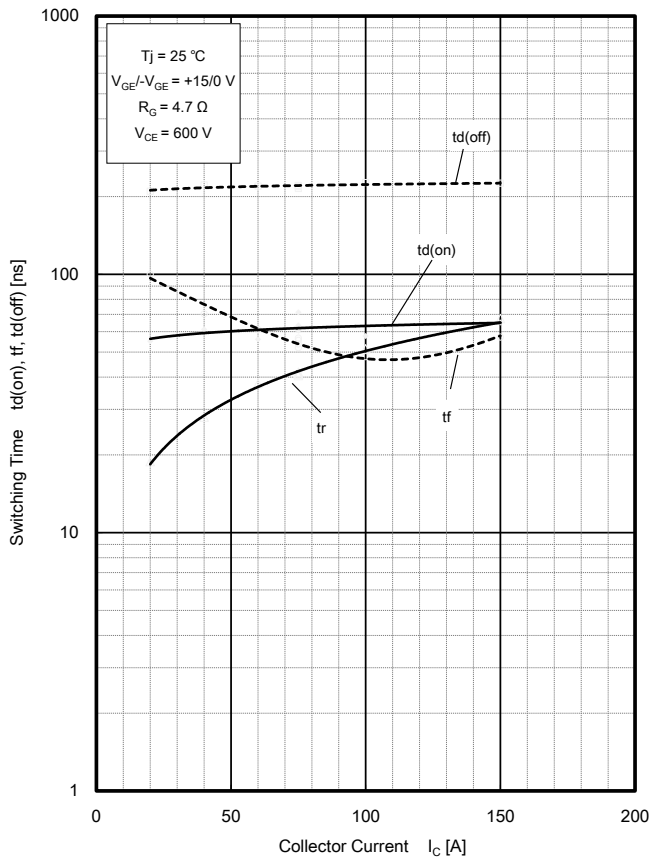
Switching Characteristics (Typ.)



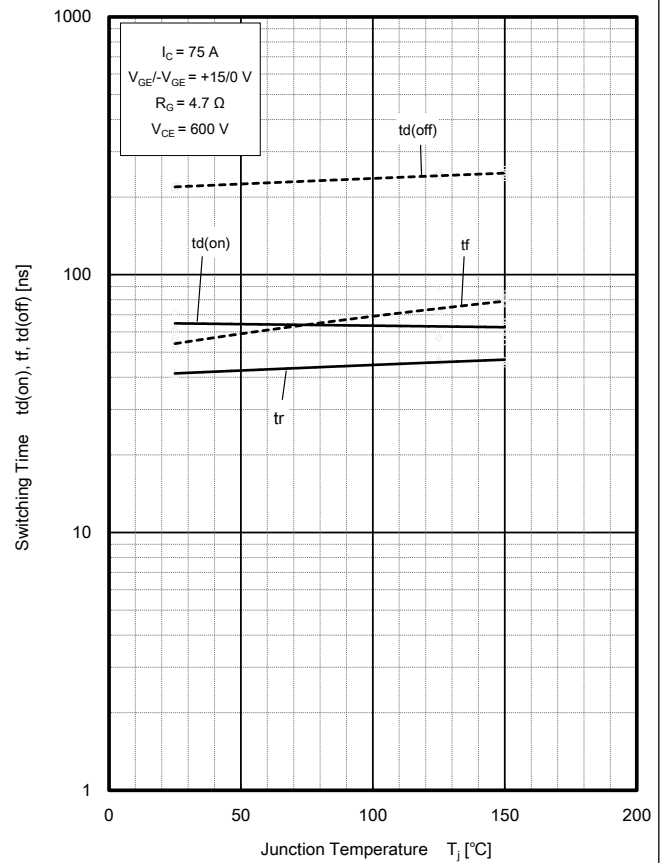
Switching Characteristics (Typ.)



Switching Characteristics (Typ.)

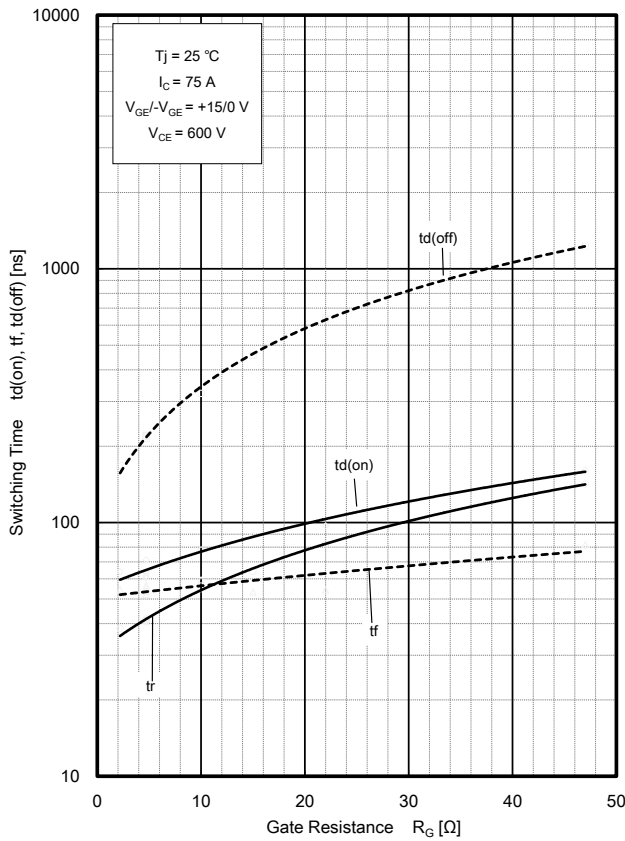


Switching Characteristics (Typ.)

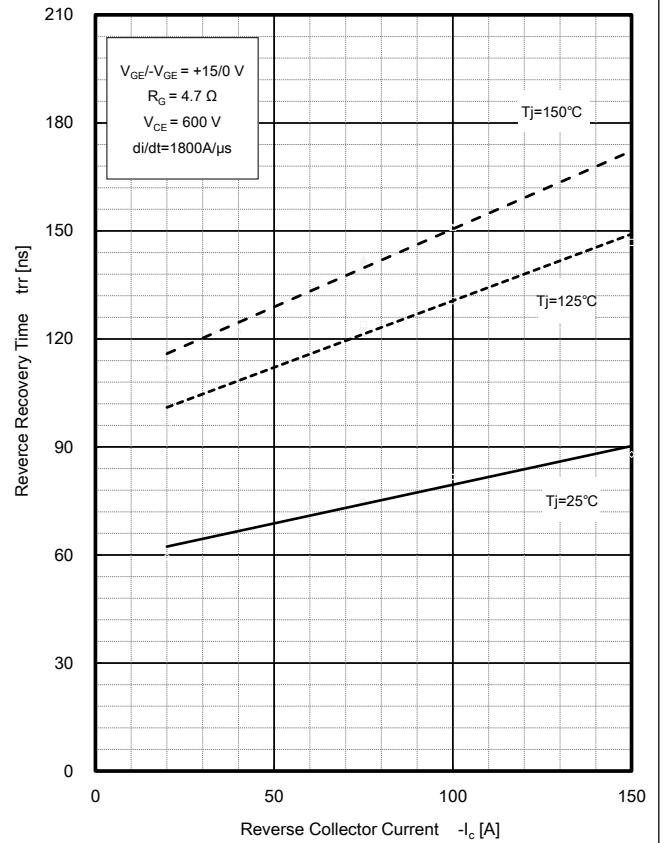




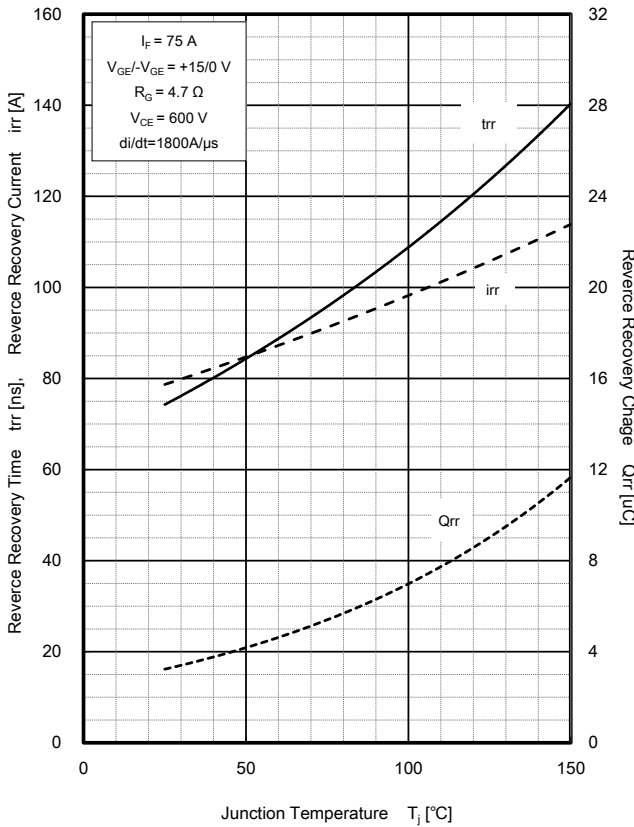
Switching Characteristics (Typ.)



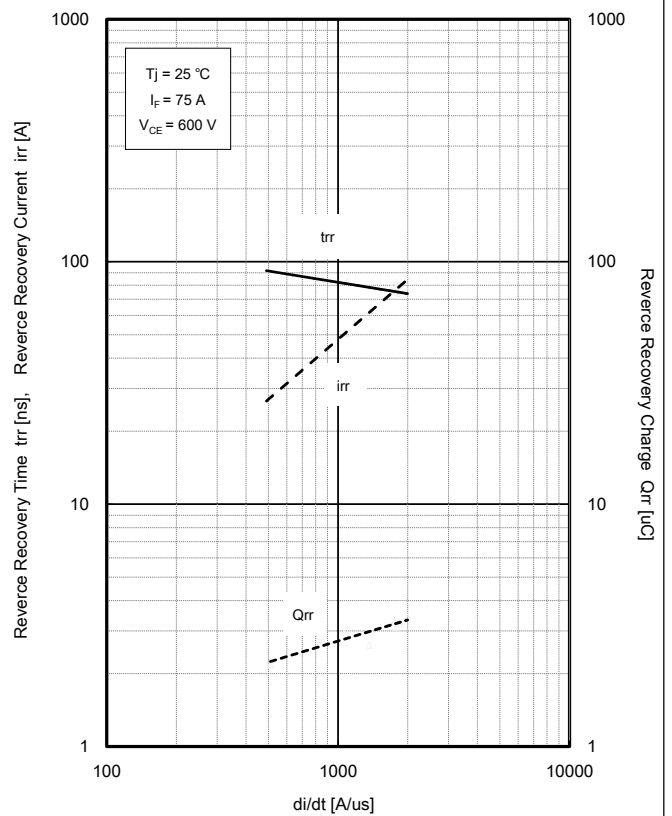
Switching Characteristics (Typ.)



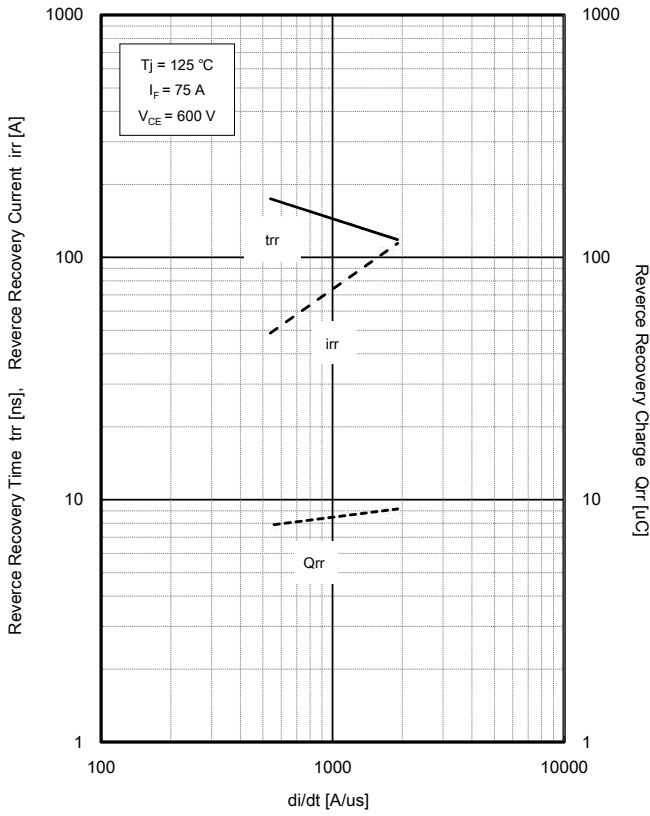
Switching Characteristics (Typ.)



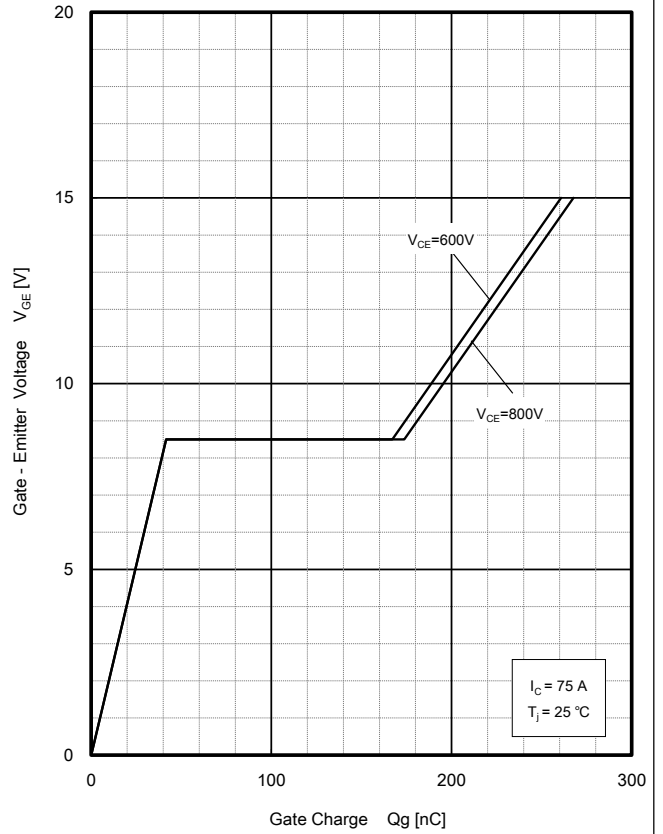
Switching Characteristics (Typ.)



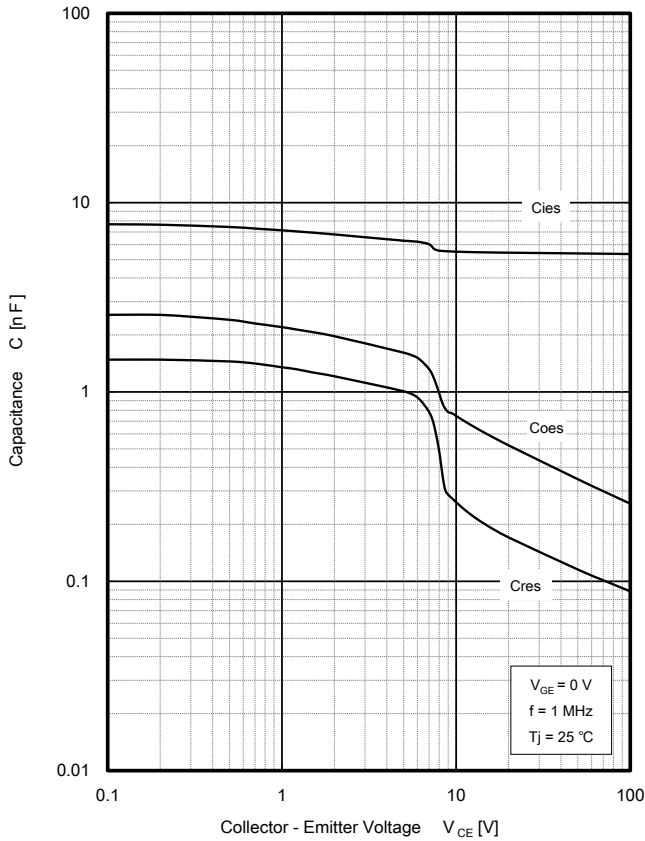
Switching Characteristics (Typ.)



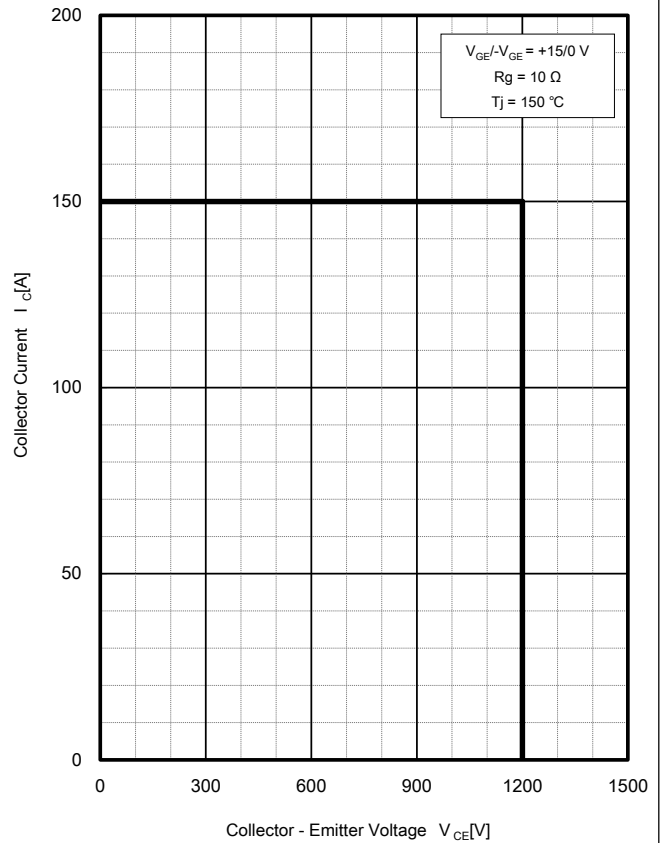
Gate Charge Characteristics (Typ.)



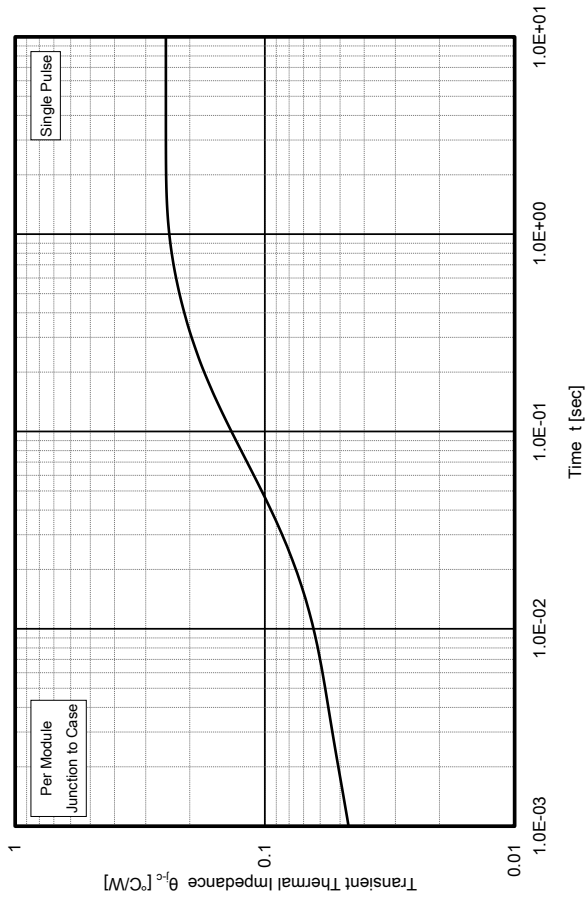
Capacitance Characteristics (Typ.)



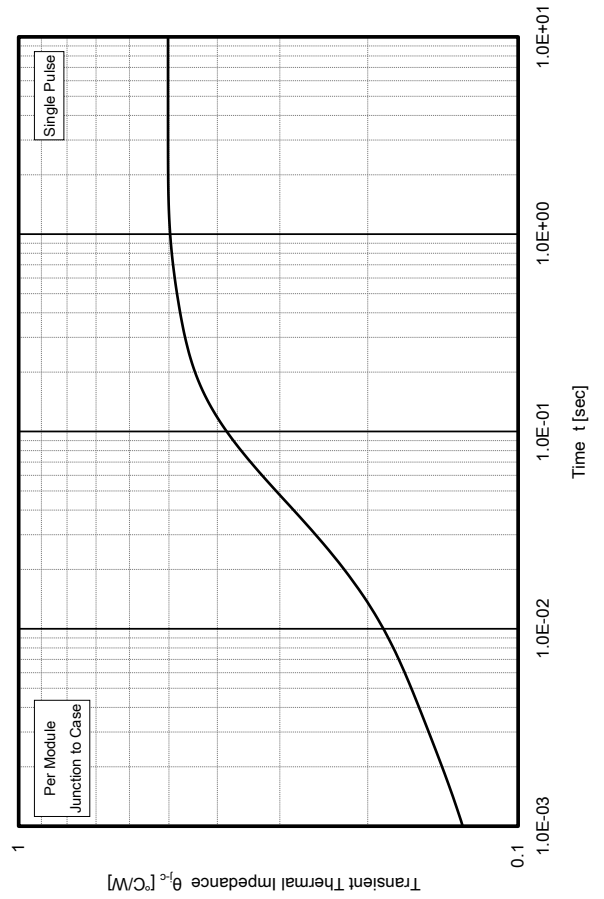
Reverse Bias Safe Operating Area



Transient Thermal Impedance Characteristics (IGBT) (Typ.)



Transient Thermal Impedance Characteristics (FRD) (Typ.)



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