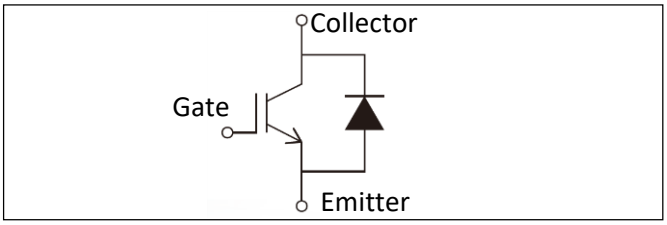
GSA75AA120



Same package as the product in this photo.

V_{CES} = 1200V
I_C = 75A



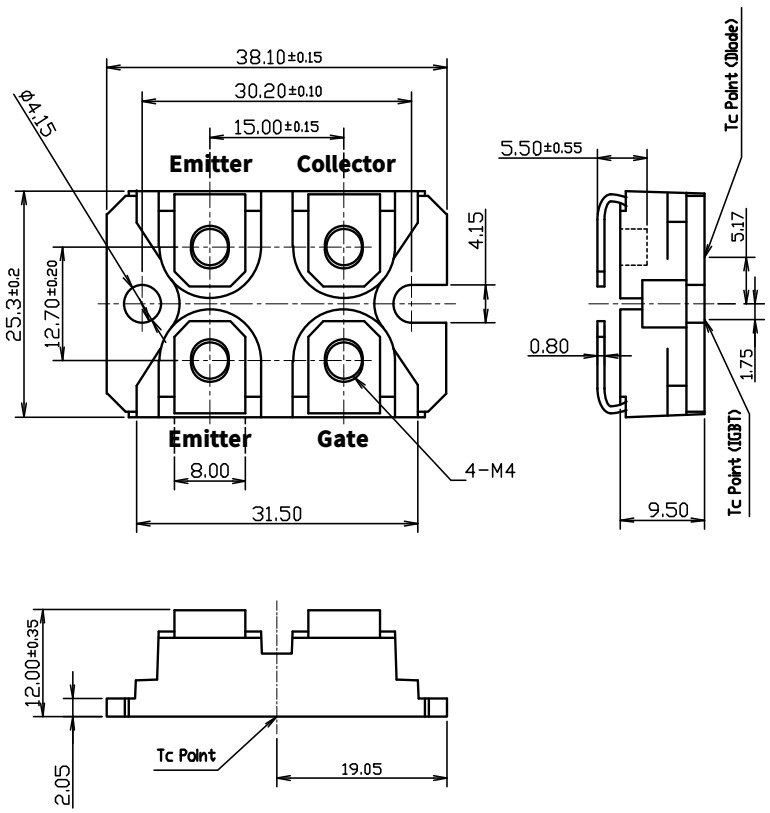
■ IGBT

Advantages

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

Applications

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



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Same package as the product in this photo.

V_{CES} = 1200V
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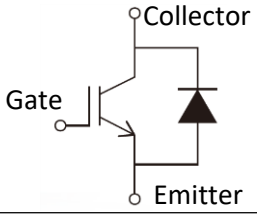


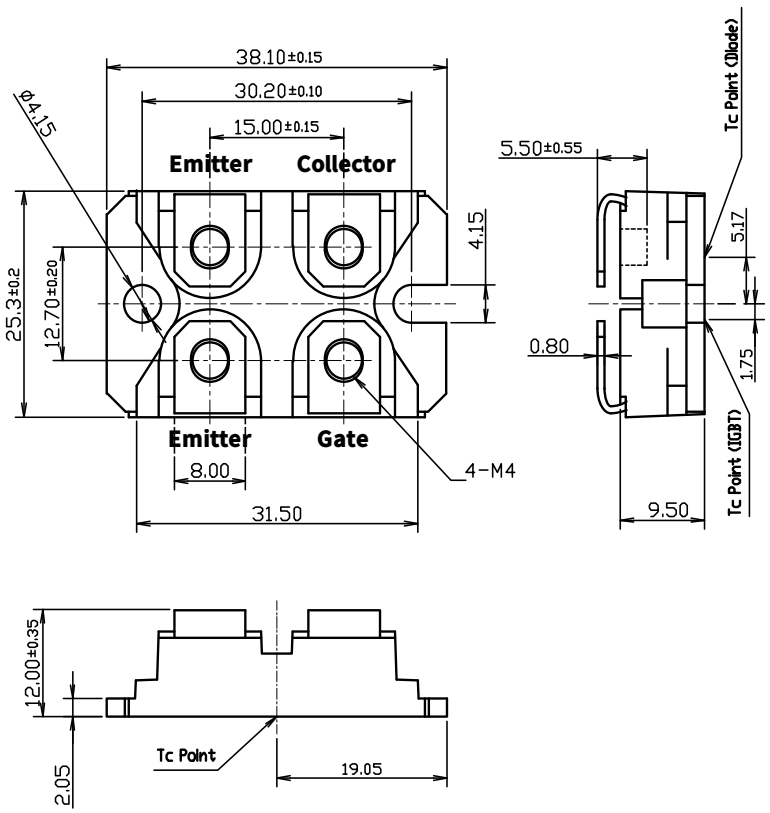
■ IGBT

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℃ unless otherwise specified)

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

■ Electrical Characteristics (T_j=25℃ unless otherwise specified)

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

■ Thermal Characteristics (T_j=25℃ unless otherwise specified)

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

■ Mechanical Characteristics (T_j=25℃ 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_j=25℃ unless otherwise specified)

Item	Symbol	Unit	Ratings			Conditions
			Min.	Typ.	Max.	
Total Gate Charge	Q_g	nC		260		I_C = 75 A, V_{GE}/-V_{GE} = +15/0 V V_{CE} = 600 V *1
Gate - Emitter Charge	Q_{ge}	nC		42		
Gate - Collector Charge	Q_{gc}	nC		126		
Turn - On Switching Loss	E_{on}	mJ		2.2		I_C = 75 A, V_{GE}/-V_{GE} = +15/0 V V_{CE} = 600 V, R_G = 4.7 Ω *1
Turn - Off Switching Loss	E_{off}	mJ		2.8		
Total Switching Loss	E_{tot}	mJ		5.0		
Turn - On Delay Time	$t_{d(on)}$	ns		70		
Rise Time	t_r	ns		45		
Turn - Off Delay Time	$t_{d(off)}$	ns		220	600	
Fall Time	t_f	ns		55	200	
Turn - On Switching Loss	E_{on}	mJ		3.9		I_C = 75 A, V_{GE}/-V_{GE} = +15/0 V V_{CE} = 600 V, R_G = 4.7 Ω, T_j = 125 ℃ *1
Turn - Off Switching Loss	E_{off}	mJ		4.6		
Total Switching Loss	E_{tot}	mJ		8.5		
Turn - On Delay Time	$t_{d(on)}$	ns		70		
Rise Time	t_r	ns		50		
Turn - Off Delay Time	$t_{d(off)}$	ns		250		
Fall Time	t_f	ns		75		
Reverse Recovery Time	t_{rr}	ns		75		-I_C(I_F) = 75 A, V_{CE}(V_R) = 600 V di/dt =1800 A/μs *1
Peak Reverse Recovery Current	i_{rr}	A		80		
Reverse Recovery Charge	Q_{rr}	μC		3.2		
Reverse Recovery Time	t_{rr}	ns		125		-I_C(I_F) = 75 A, V_{CE}(V_R) = 600 V di/dt =1800 A/μs, T_j = 125 ℃ *1
Peak Reverse Recovery Current	i_{rr}	A		110		
Reverse Recovery Charge	Q_{rr}	μC		9.0		

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

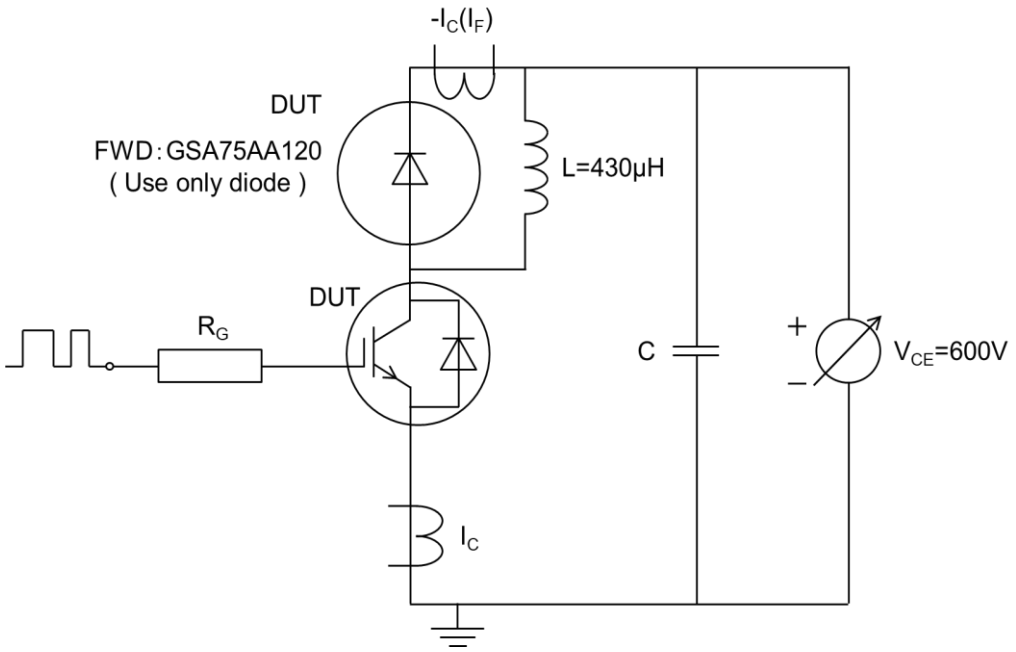


Fig.1 Inductive load switching time test circuit

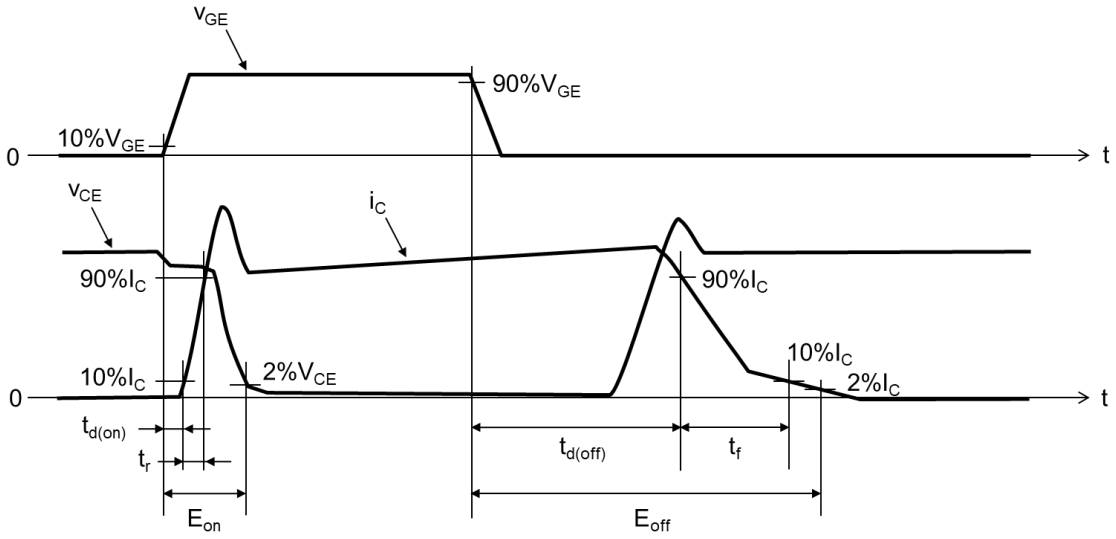


Fig.2 Switching waveform at the time of Inductive load

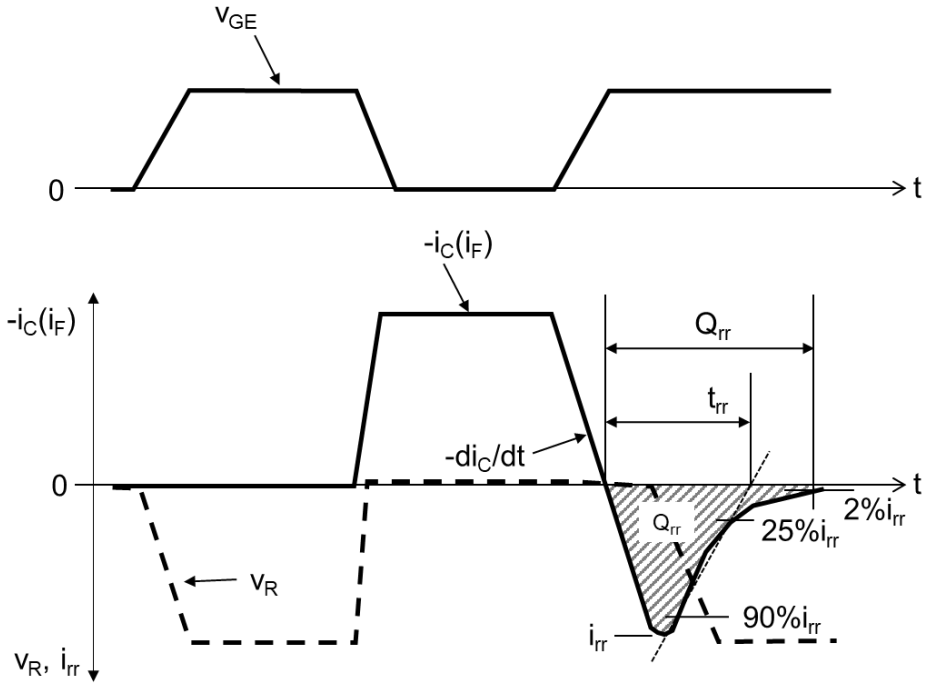
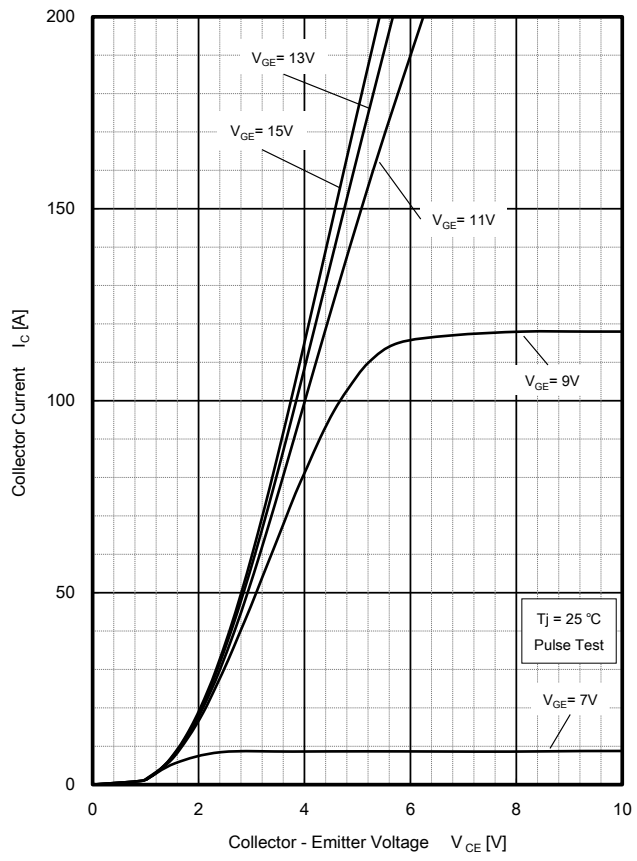
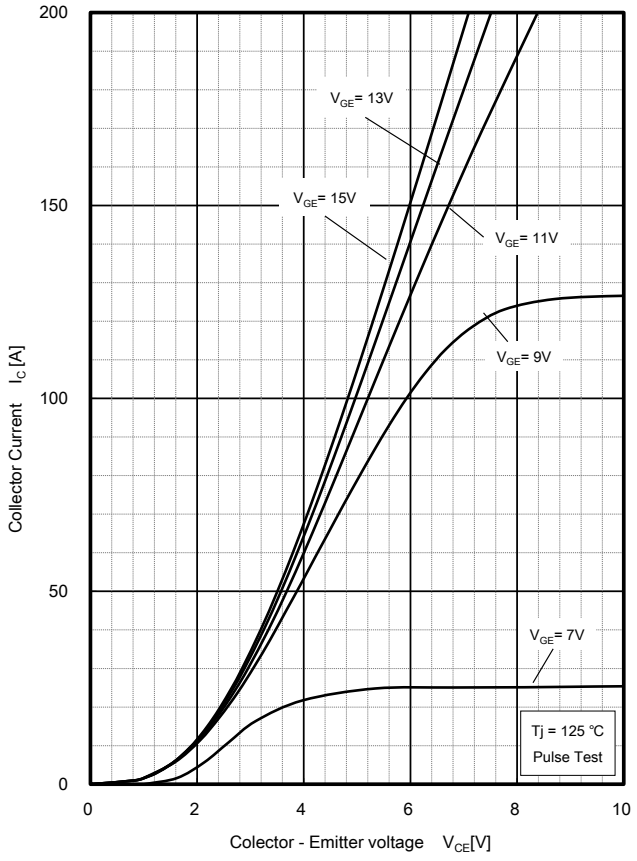


Fig.3 Reverse recovery waveform at the time of Inductive load

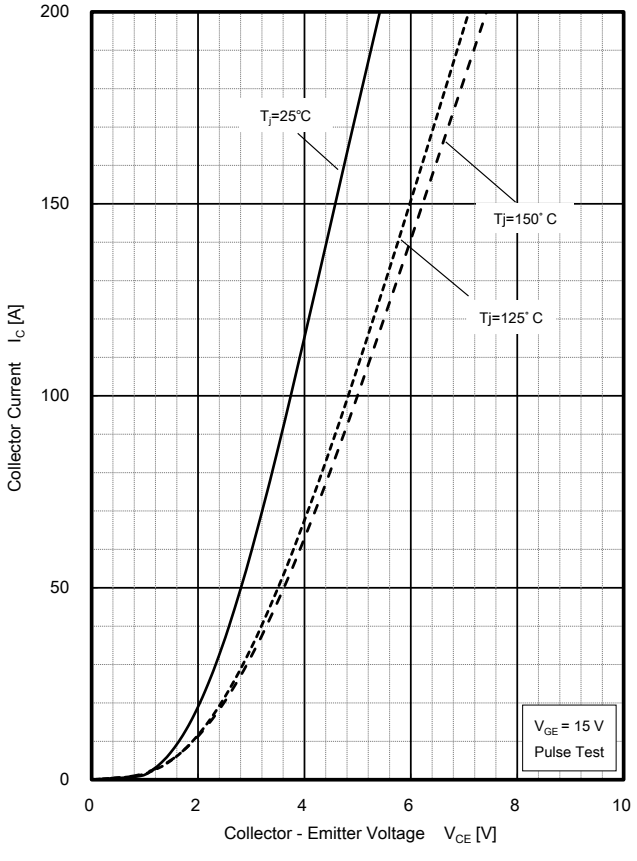
Output Characteristics (Typ.)



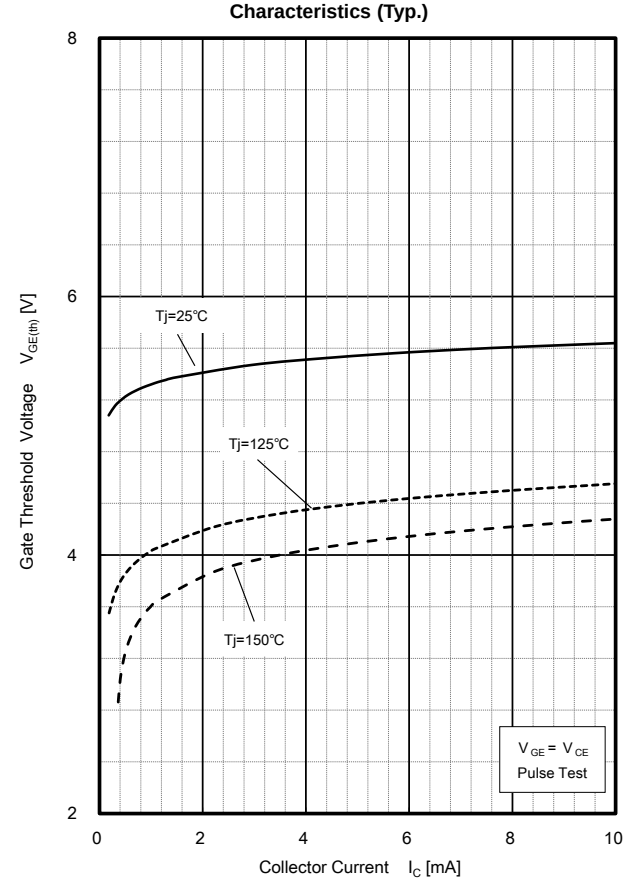
Output Characteristics (Typ.)



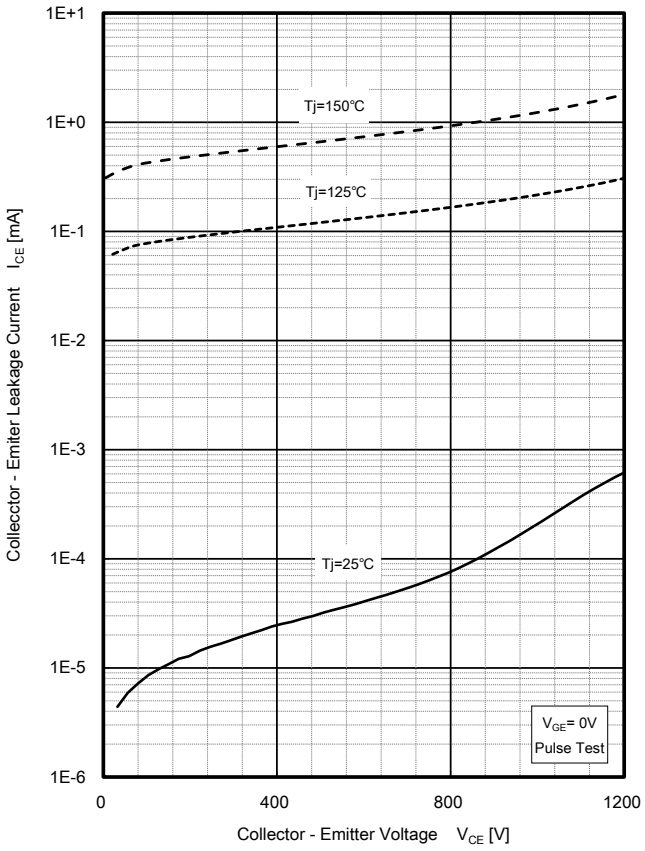
Output Characteristics (Typ.)



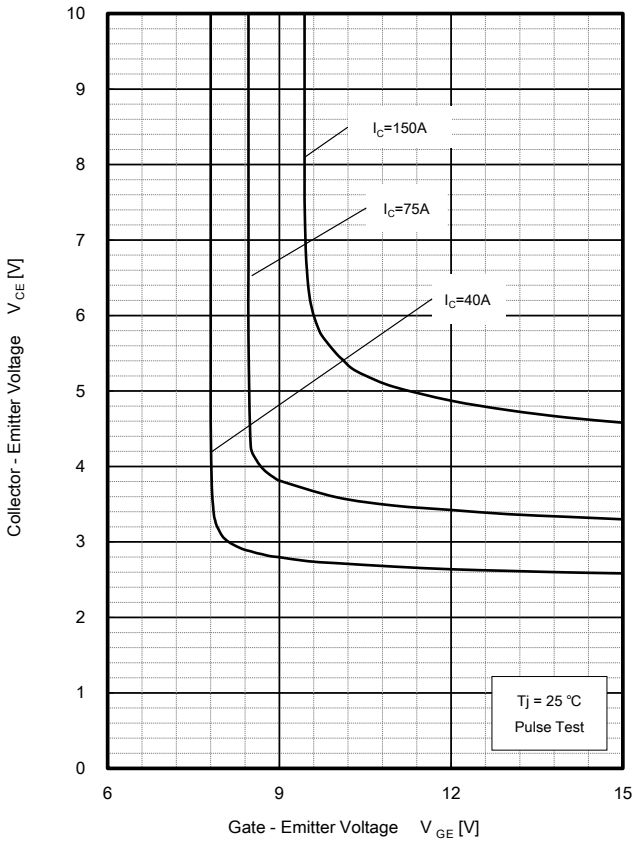
Gate Threshold Voltage Characteristics (Typ.)



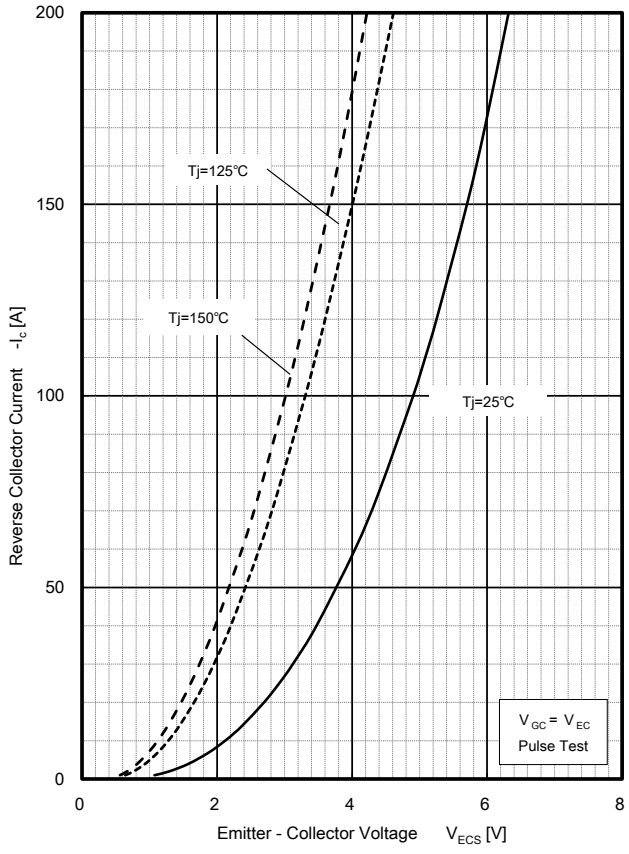
Collector - Emitter Leakage Current Characteristics (typ.)



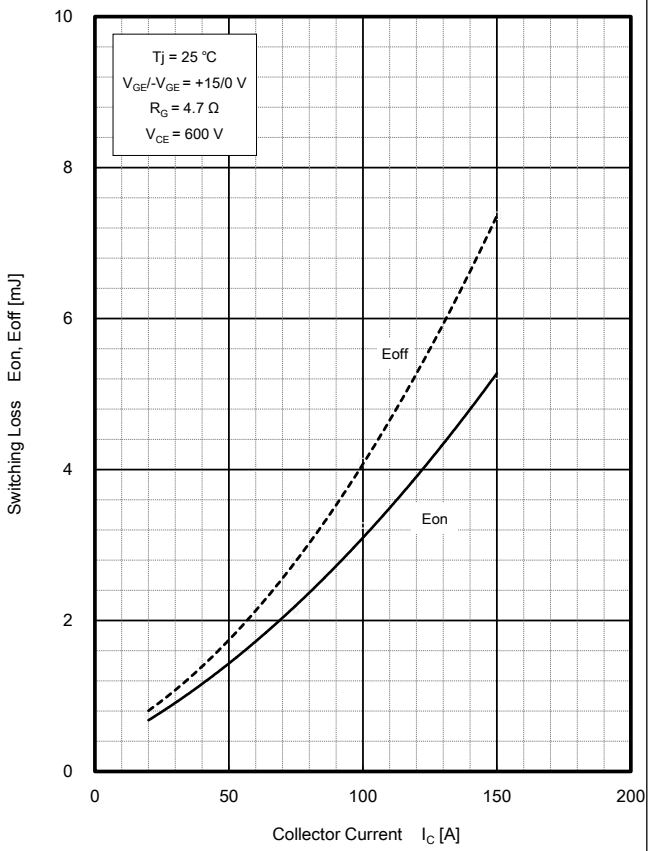
Collector - Emitter Saturation Voltage Characteristics (Typ.)



Reverse Collector Current Characteristics (Typ.)



Switching Characteristics (Typ.)



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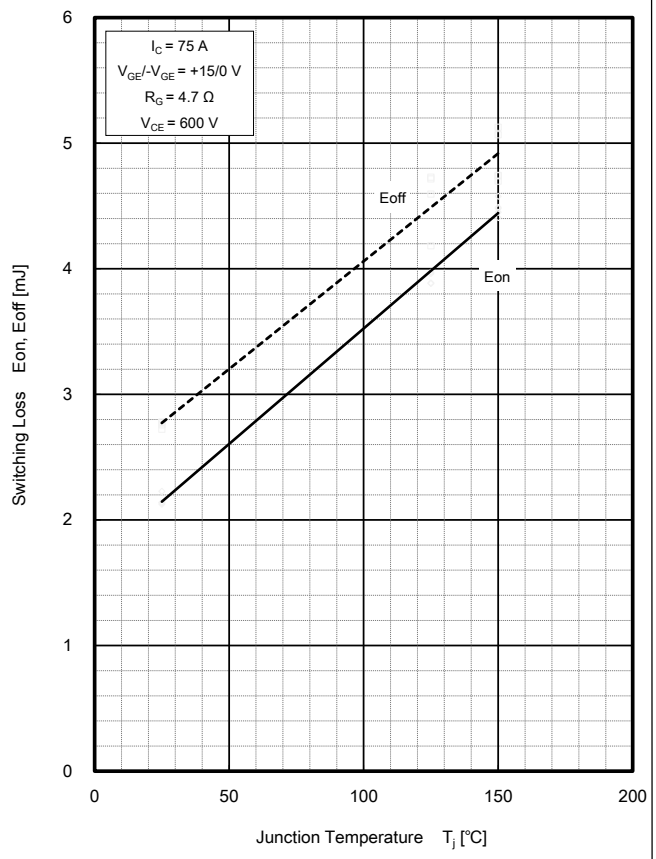
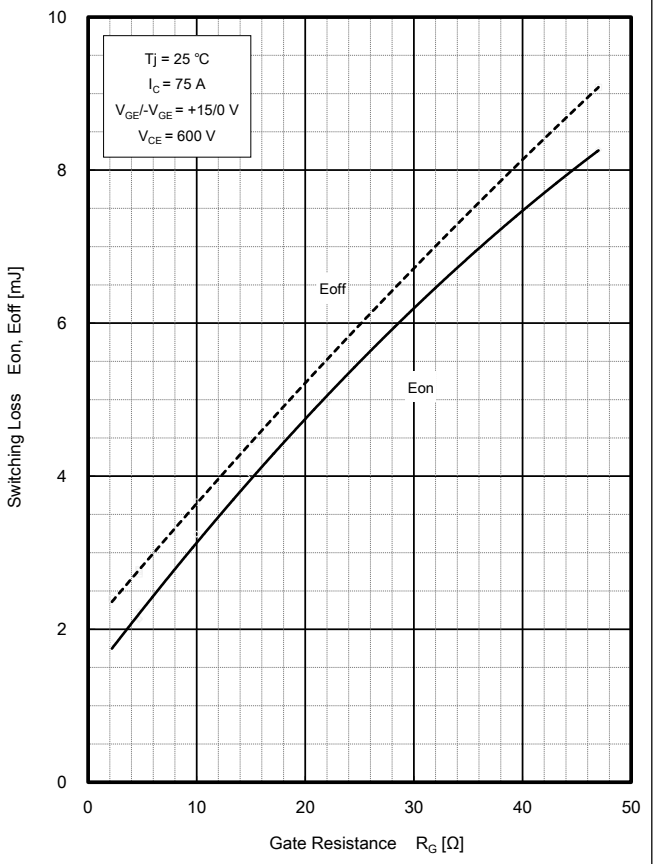


Switching Characteristics (Typ.)



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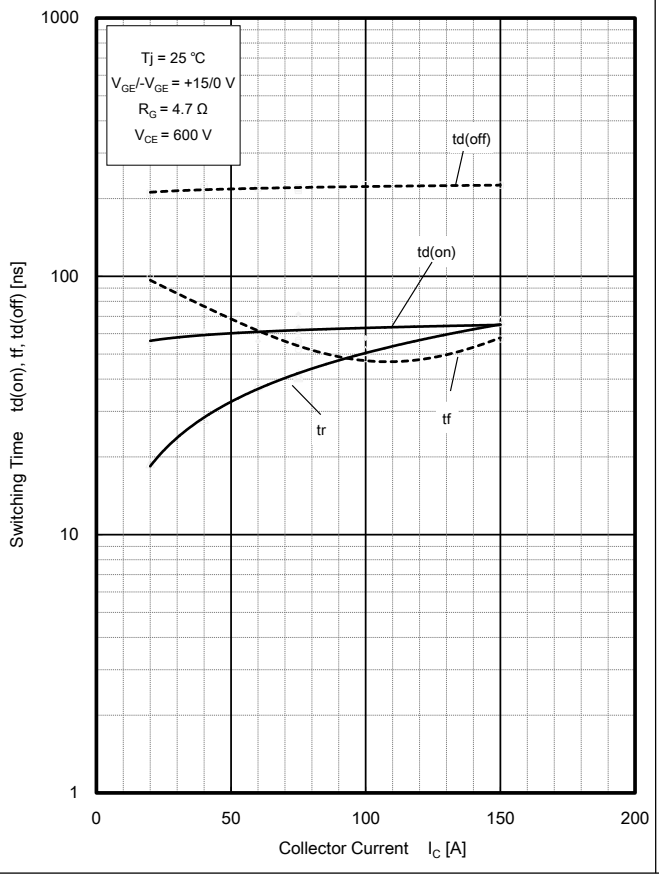

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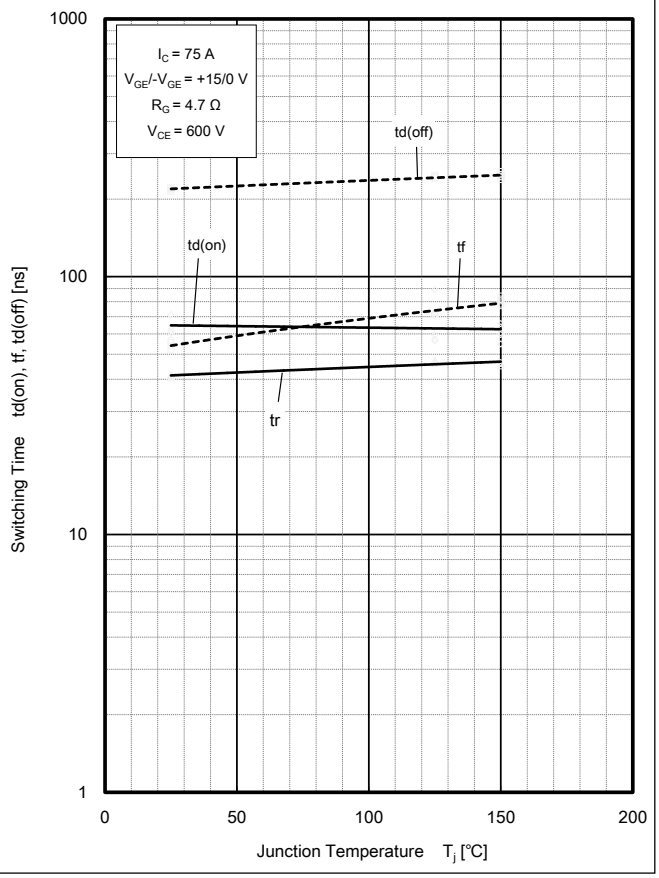

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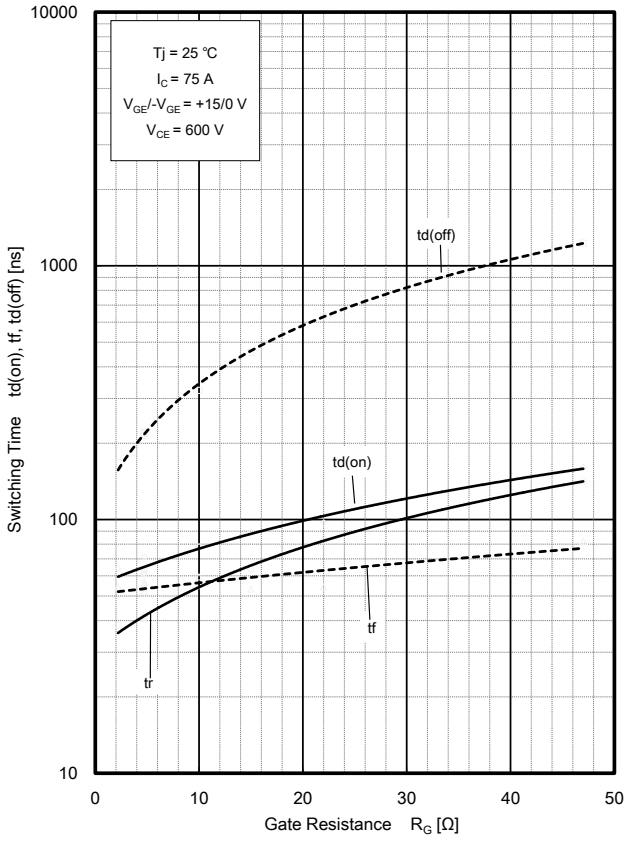

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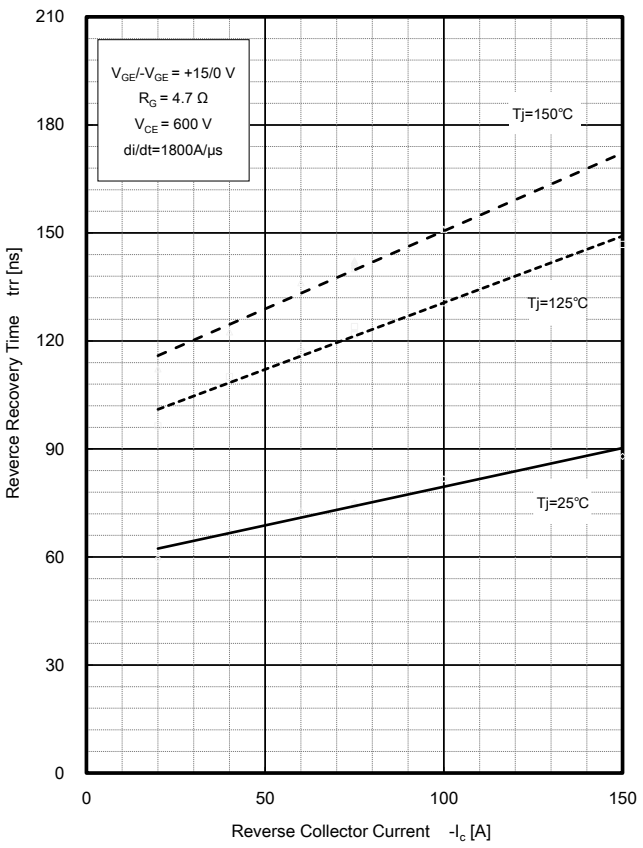
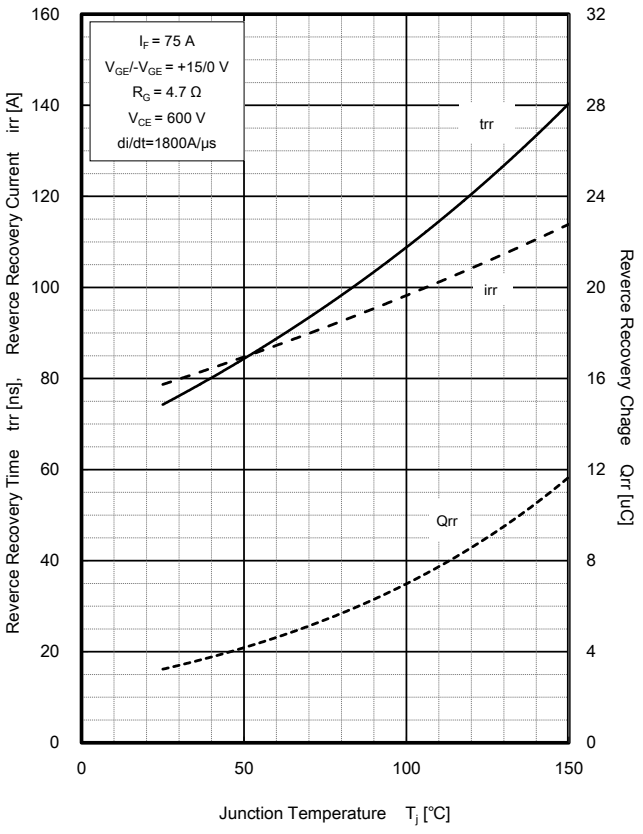


Switching Characteristis (Typ.)



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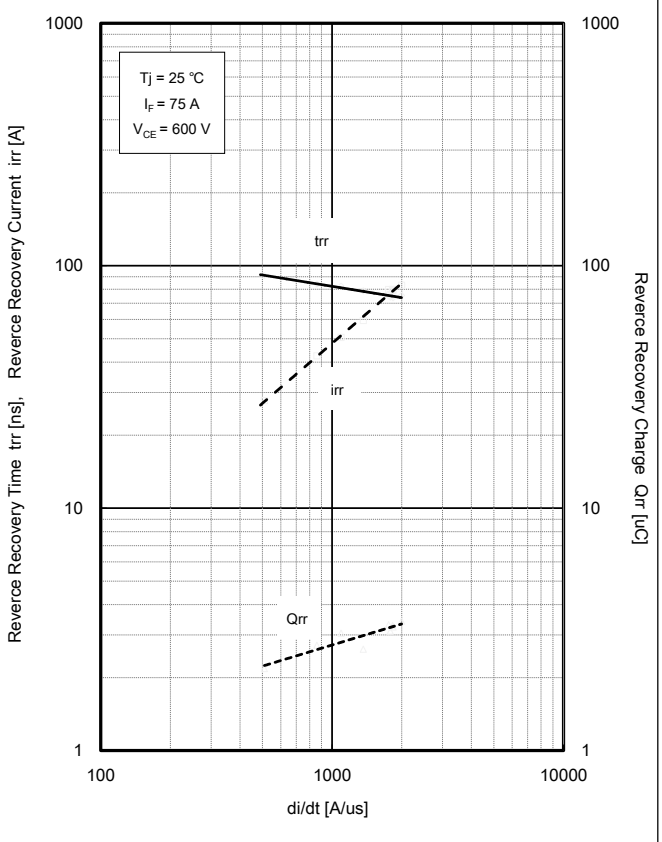

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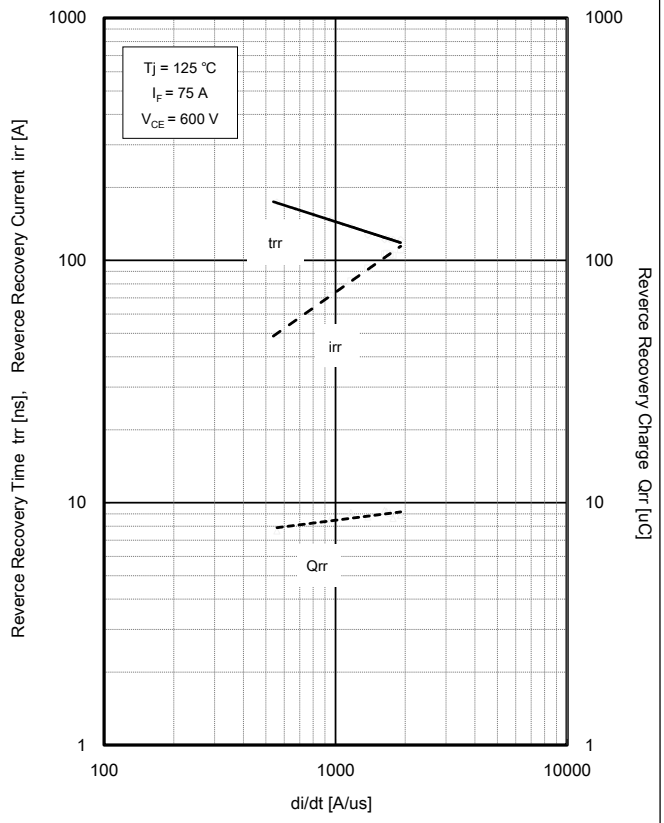
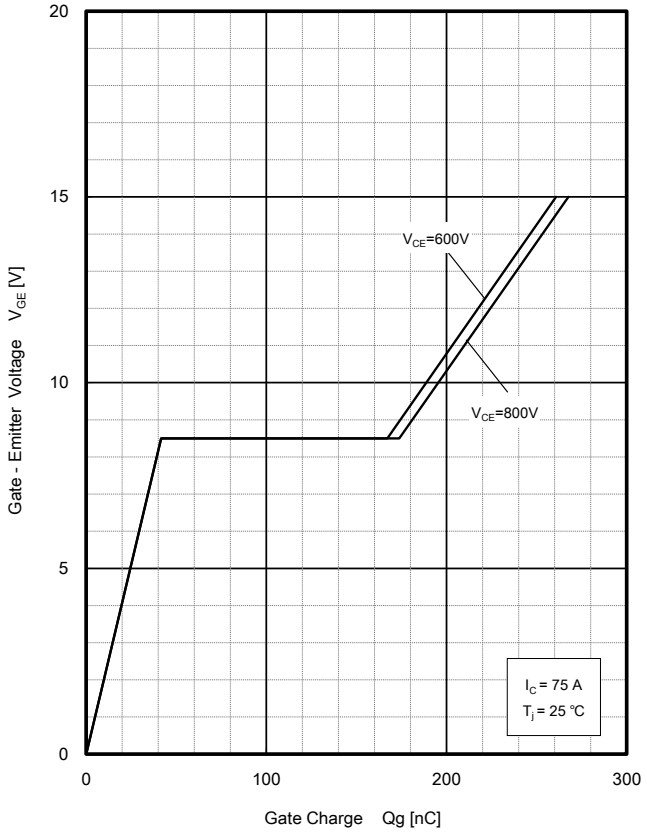
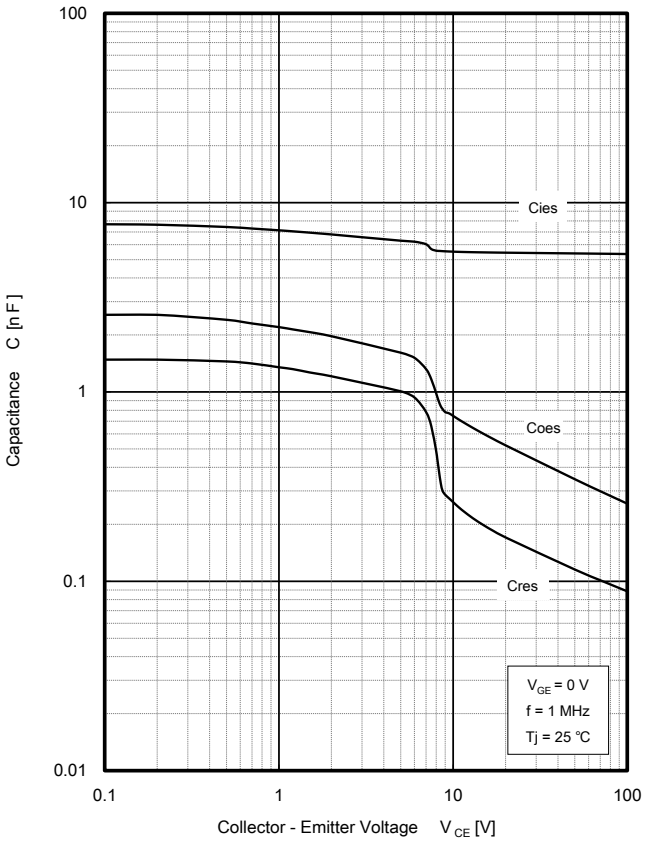


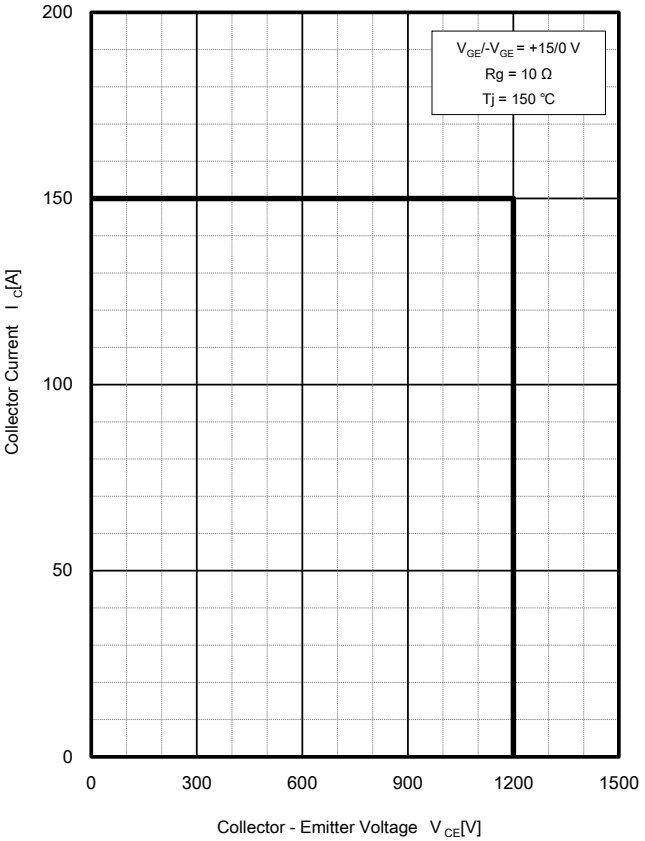
Gate Charge Characteristics (Typ.)



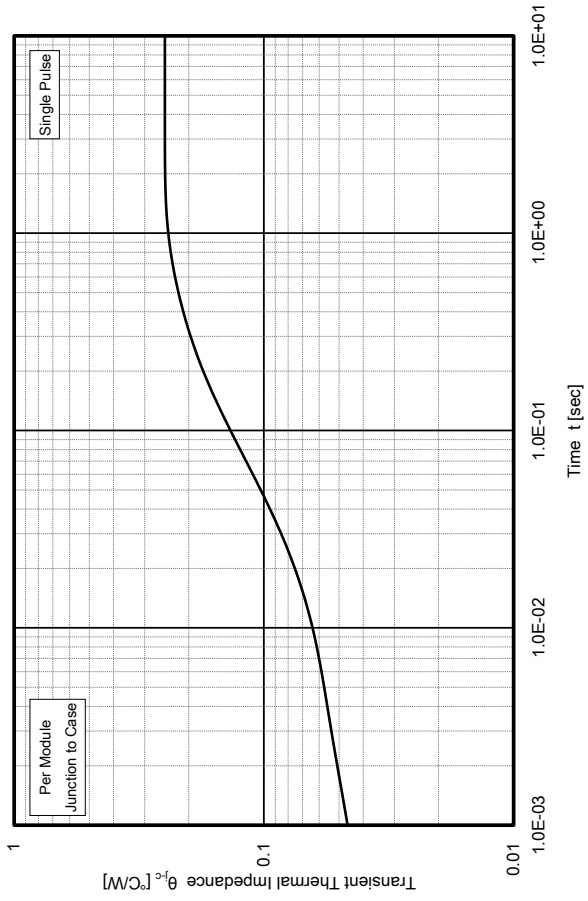
Capacitance Characteristics (Typ.)



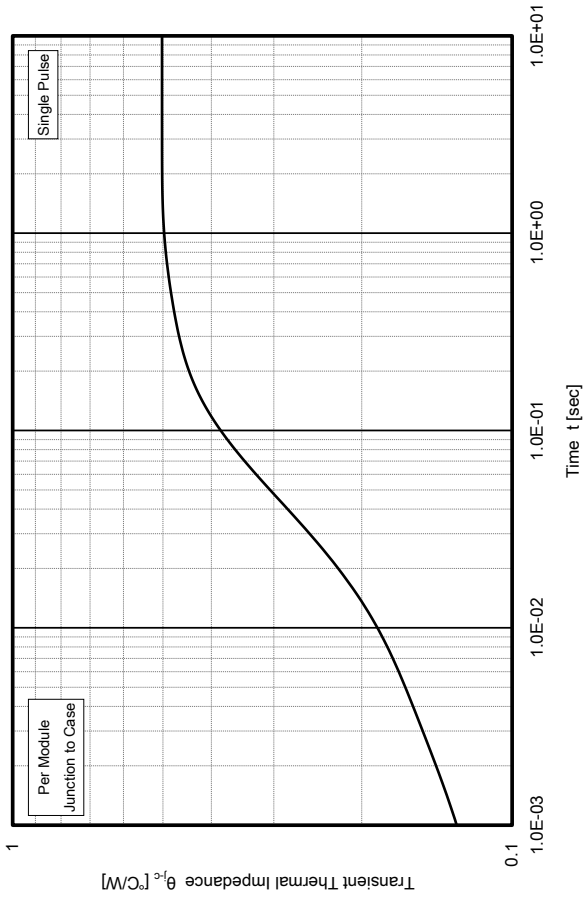
Reverce Bias Safe Operating Area



Transient Thermal Impedance Characteristics (IGBT) (Typ.)



Transient Thermal Impedance Characteristics (FRD) (Typ.)



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