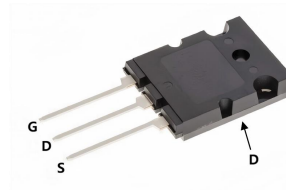


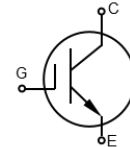
Features

- Low Gate charge
- FS Technology
- $V_{CE(sat)} (typ.) = 1.73V @ I_C = 50A$
- High Input Impedance
- Short circuit withstand time 10 μs



Applications

- PFC
- UPS
- Inverter



Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Collector-Emitter voltage		V_{CES}	1700	V
Gate-emitter voltage		V_{GES}	± 30	
Collector current	$T_C = 25^\circ C$	I_C	200	A
	$T_C = 100^\circ C$		100	
Pulsed collector current(note 1)		I_{CM}	400	
Short circuit withstand time(note 2)		T_{SC}	10	μs
Short current		I_{SC}	250	A
Power dissipation	$T_C = 25^\circ C$	P_D	595	W
	$T_C = 100^\circ C$		238	
Operating Junction and storage temperature range		T_J	-45 to 175	$^\circ C$
		T_{stg}	-55 to 150	
Maximum Lead Temperature for Soldering Purposes		TL	300	$^\circ C$

Electrical Characteristics ($T_C = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Static Characteristics						
Collector-emitter breakdown voltage	BV_{CES}	$I_C = 500\mu A, V_{GE} = 0V$	1700	-	-	V
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}, I_C = 100\mu A$	3.8	5.4	7	
Zero gate voltage collector current	I_{CES}	$V_{CE} = 1700V, V_{GE} = 0V$	-	-	200	μA
Gate-emitter leakage current	I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0V$	-	-	± 100	nA
Collector-emitter saturation voltage(note 3)	$V_{CE(sat)}$	$I_C = 50A, V_{GE} = 15V, T_C = 25^{\circ}C$	-	1.73	2.3	V
		$I_C = 50A, V_{GE} = 15V, T_C = 125^{\circ}C$	-	2.2	-	
Dynamic and Switching Characteristics						

Input capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1.0MHz$ (note 4)	-	5630	-	pF
Reverse transfer capacitance	C_{res}		-	72	-	
Output capacitance	C_{oes}		-	246	-	
Total gate charge	Q_g	$V_{CE} = 850V, I_C = 100A,$ $V_{GE} = 15V$ (note 4)	-	310	-	nC
Gate to emitter charge	Q_{ge}		-	48	-	
Gate to collector charge	Q_{gc}		-	155	-	
Turn-on delay time	$t_{d(on)}$	$V_{GE} = 15V, V_{CC}=850V,$ $I_C = 100A, R_G = 10\Omega,$ Inductive Load, $T_C = 25^\circ C$	-	86	-	ns
Rise time	t_r		-	68	-	
Turn-off delay time	$t_{d(off)}$		-	135	-	
Fall time	t_f		-	98	-	
Turn-on switching energy	E_{on}		-	1.5	-	mJ
Turn-off switching energy	E_{off}		-	1.4	-	
Total switching energy	E_{ts}		-	2.9	-	
Turn-on delay time	$t_{d(on)}$	$V_{GE} = 15V, V_{CC}=850V,$ $I_C = 100A, R_G = 10\Omega,$ Inductive Load, $T_C = 125^\circ C$	-	83	-	ns
Rise time	t_r		-	66	-	
Turn-off delay time	$t_{d(off)}$		-	140	-	
Fall time	t_f		-	111	-	
Turn-on switching energy	E_{on}		-	2.25	-	mJ
Turn-off switching energy	E_{off}		-	4.2	-	
Total switching energy	E_{ts}		-	6.45	-	

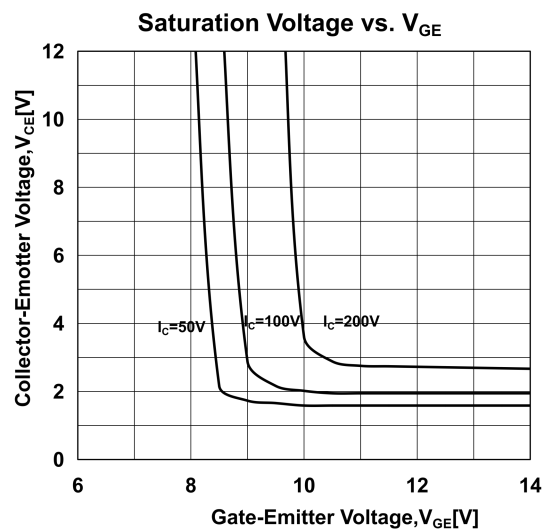
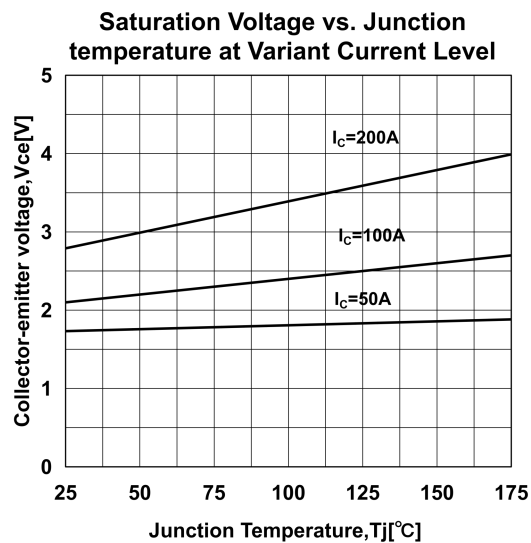
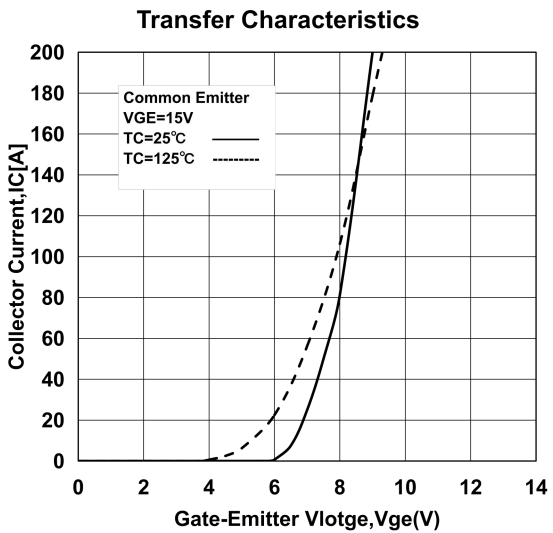
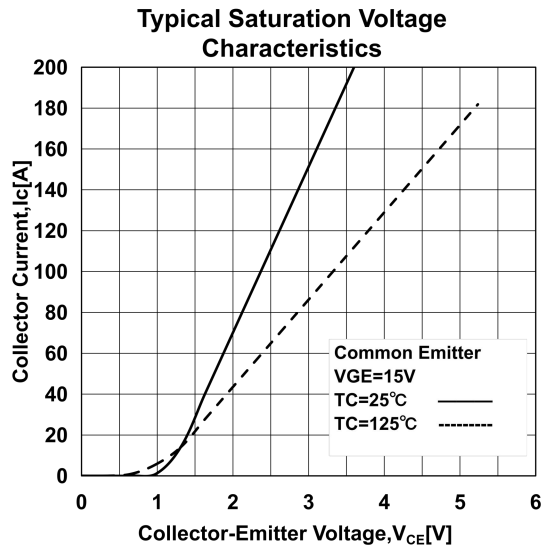
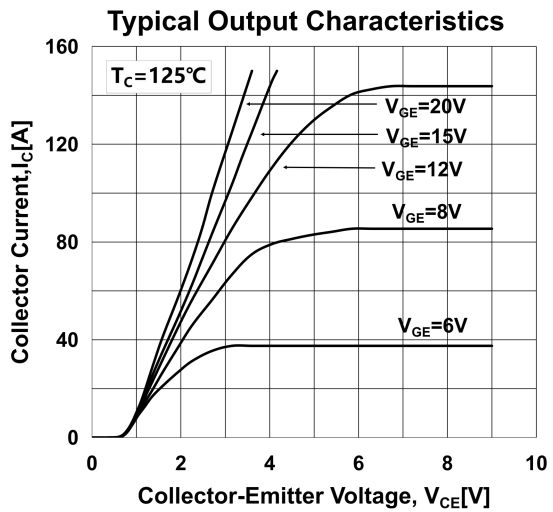
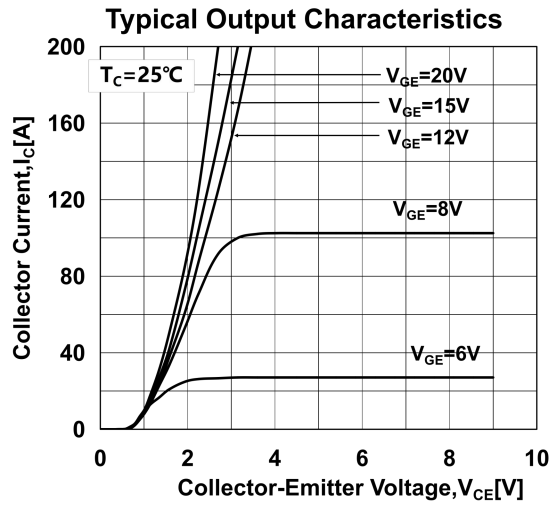
Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: Allowed number of short circuits: <1000; time between short circuits: >1s.
- 3: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycles $\leq 2\%$
- 4: Essentially independent of operating temperature

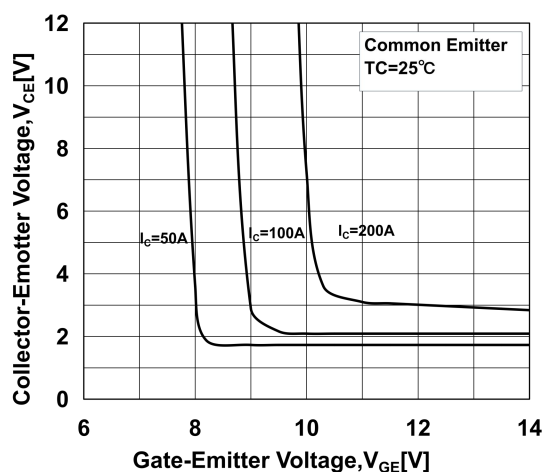
Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance junction-to-ambient	$R_{\theta JA}$	62.5	$^\circ C/W$
Thermal resistance junction-to-case for IGBT	$R_{\theta JC}$	0.21	

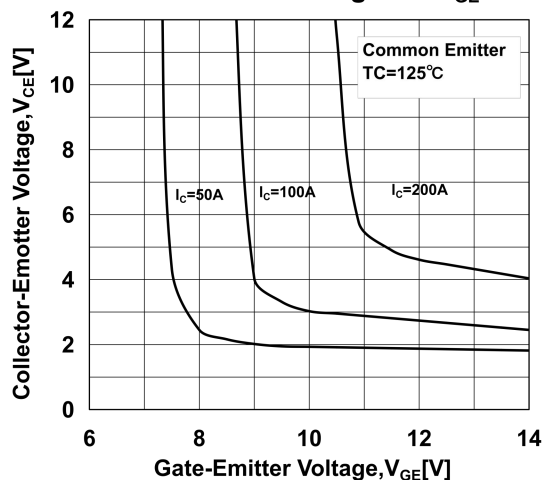
Typical Performance Characteristics



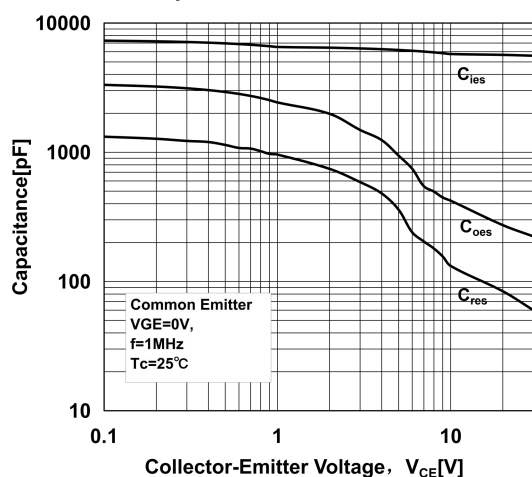
Saturation Voltage vs. V_{GE}



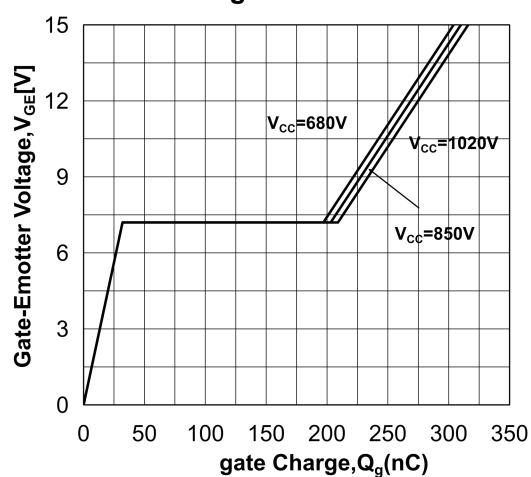
Saturation Voltage vs. V_{GE}



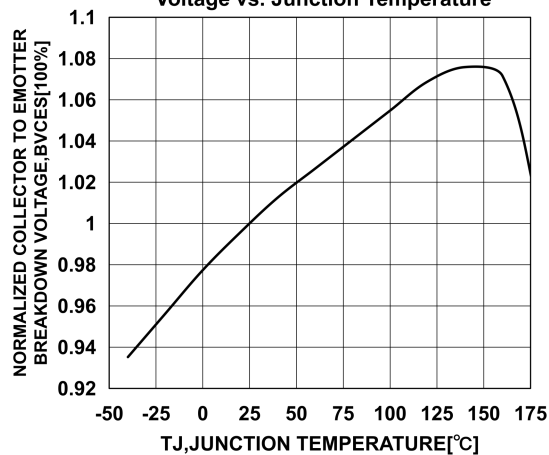
Capacitance Characteristics



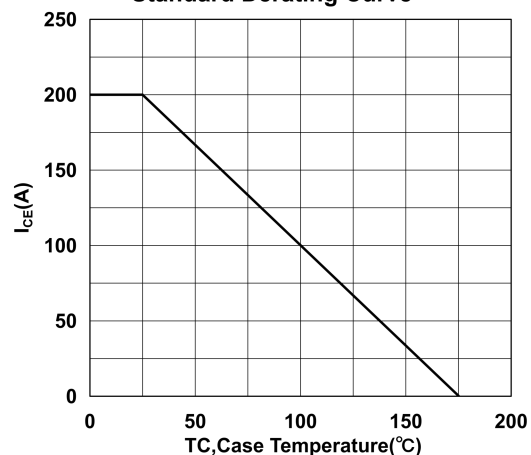
Gate Charge Characteristics

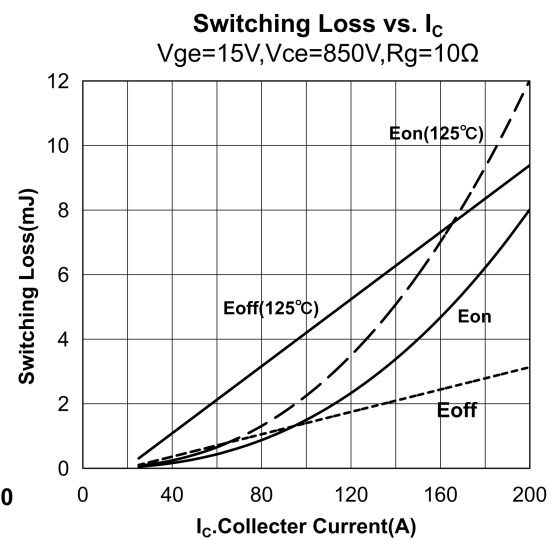
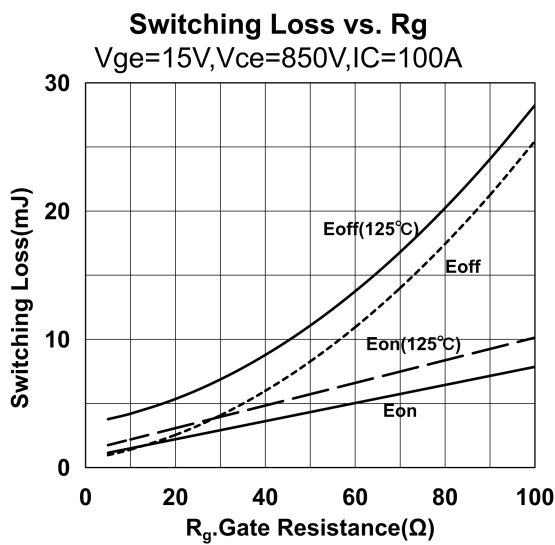
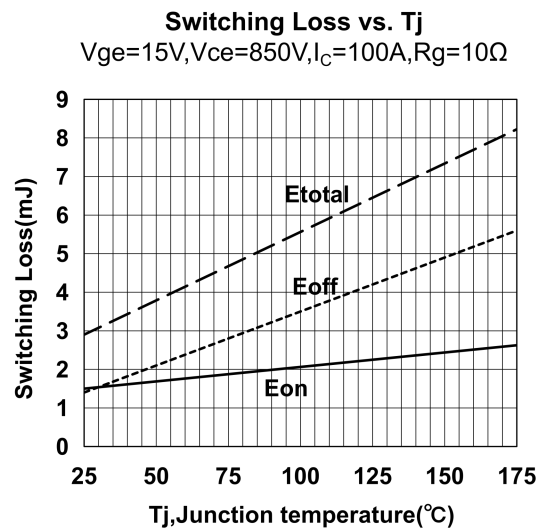
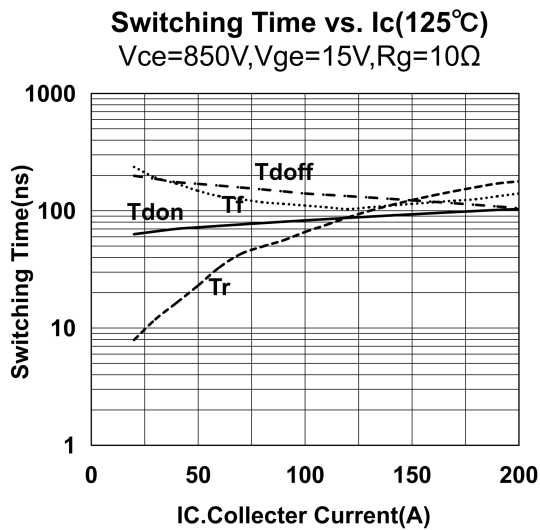
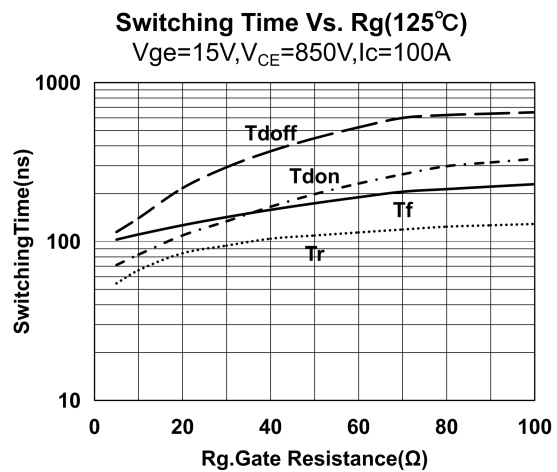
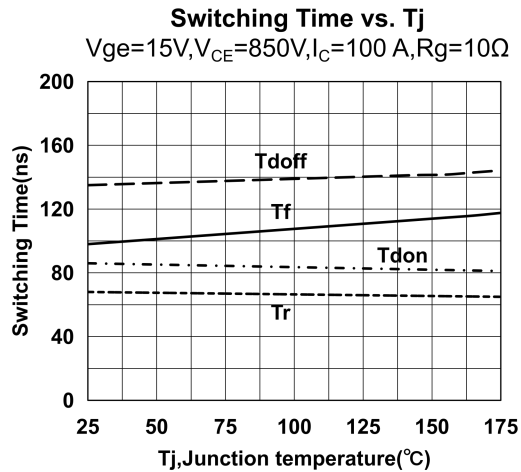


Normalized Collector to Emitter Breakdown Voltage vs. Junction Temperature

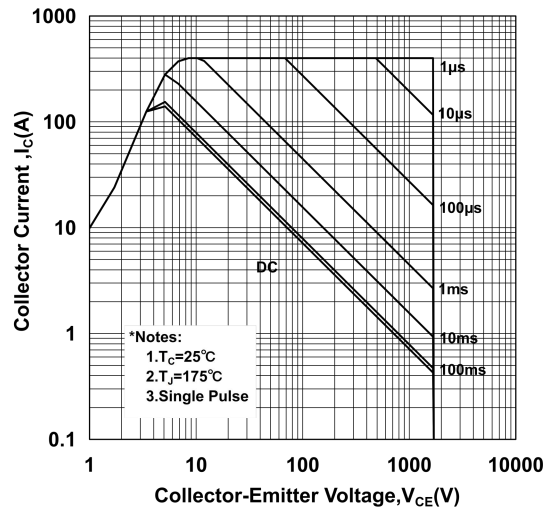


Maximum Collector-Emitter Current Standard Derating Curve

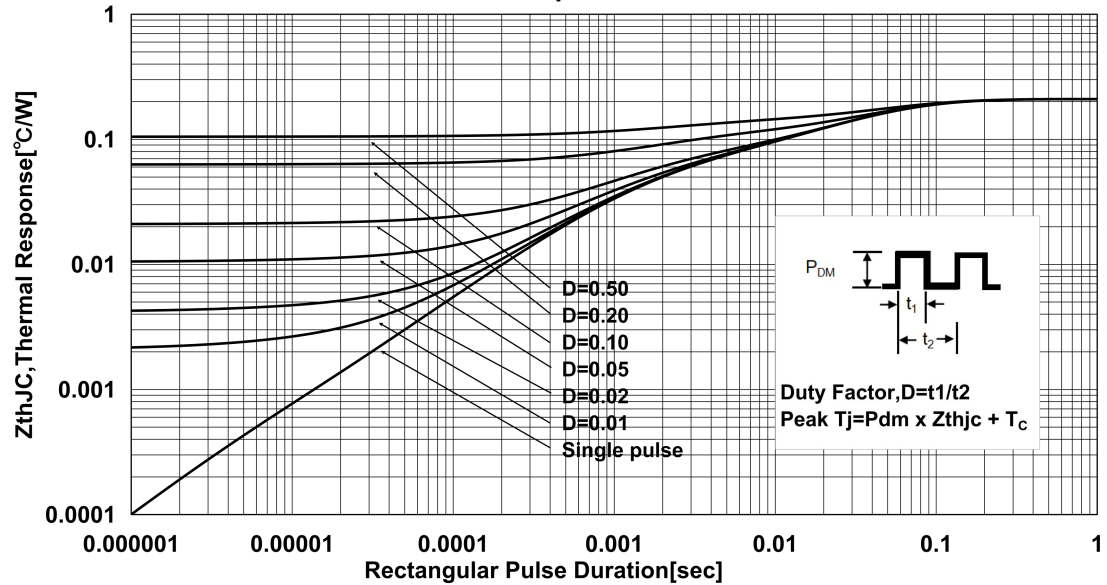




Foward Bias Safe Operating Area



Transient Thermal Impedance of IGBT



Package outline dimension

