

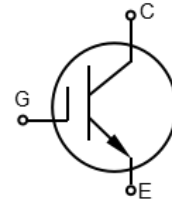
Features

- Low Gate charge
- FS Technology
- $V_{CE(sat)} (typ.) = 2.0V @ I_C = 15A$
- 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}	1200	V
Gate-emitter voltage		V_{GES}	± 20	
Collector current	$T_C = 25^\circ C$	I_C	20	A
	$T_C = 100^\circ C$		10	
Pulsed collector current(note 1)		I_{CM}	20	
Short circuit withstand time(note 2)		T_{SC}	10	μs
Short current		I_{SC}	100	A
Power dissipation	$T_C = 25^\circ C$	P_D	100	W
	$T_C = 100^\circ C$		50	
Operating Junction and storage temperature range		T_J	-40 to 175	$^\circ C$
		T_{stg}	-55 to 150	
Maximum Lead Temperature for Soldering Purposes		T_L	260	$^\circ C$

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}	$I_C = 250\mu A, V_{GE} = 0V$	1200	-	-	V
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}, I_C = 250\mu A$	4.5	5.5	6.5	
Zero gate voltage collector current	I_{CES}	$V_{CE} = 1200V, V_{GE} = 0V$	-	-	200	μA
Gate-emitter leakage current	I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0V$	-	-	± 200	nA
Collector-emitter saturation voltage(note 3)	$V_{CE(sat)}$	$I_C = 15A, V_{GE} = 15V$	-	2.0	2.5	V
		$I_C = 10A, V_{GE} = 15V, T_C = 175^\circ C$	-	1.9	-	

Dynamic and Switching Characteristics						
Input capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1.0MHz$ (note 4)	-	900	-	pF
Reverse transfer capacitance	C_{res}		-	60	-	
Output capacitance	C_{oes}		-	30	-	
Total gate charge	Q_g	$V_{CE} = 960V, I_C = 10A,$ $V_{GE} = 15V$ (note 4)	-	80	-	nC
Gate to emitter charge	Q_{ge}		-	6	-	
Gate to collector charge	Q_{gc}		-	60	-	
Turn-on delay time	$t_{d(on)}$	$V_{GE} = 15V, V_{CC}=600V,$ $I_C = 10A, R_G = 10\Omega,$ Inductive Load, $T_C = 25^\circ C$	-	17.5	-	ns
Rise time	t_r		-	18.7	-	
Turn-off delay time	$t_{d(off)}$		-	109	-	
Fall time	t_f		-	340	-	
Turn-on switching energy	E_{on}		-	0.24	-	mJ
Turn-off switching energy	E_{off}		-	0.93	-	
Total switching energy	E_{ts}		-	1.17	-	
Turn-on delay time	$t_{d(on)}$	$V_{GE} = 15V, V_{CC}=600V,$ $I_C = 10A, R_G = 10\Omega,$ Inductive Load, $T_C = 175^\circ C$	-	17	-	ns
Rise time	t_r		-	22	-	
Turn-off delay time	$t_{d(off)}$		-	131	-	
Fall time	t_f		-	537	-	
Turn-on switching energy	E_{on}		-	0.46	-	mJ
Turn-off switching energy	E_{off}		-	1.38	-	
Total switching energy	E_{ts}		-	1.84	-	

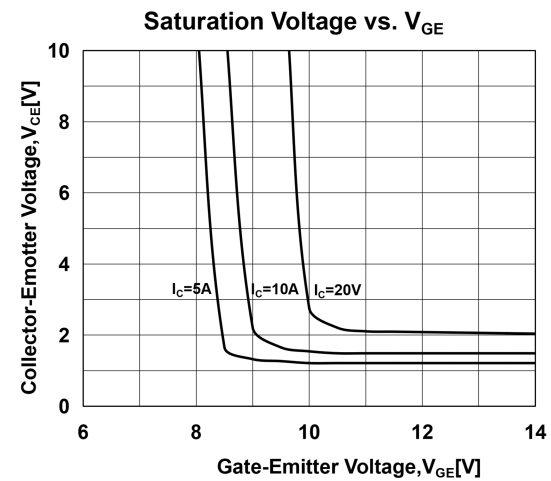
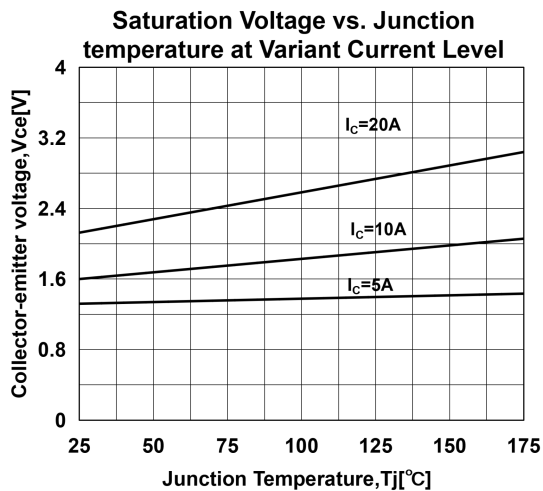
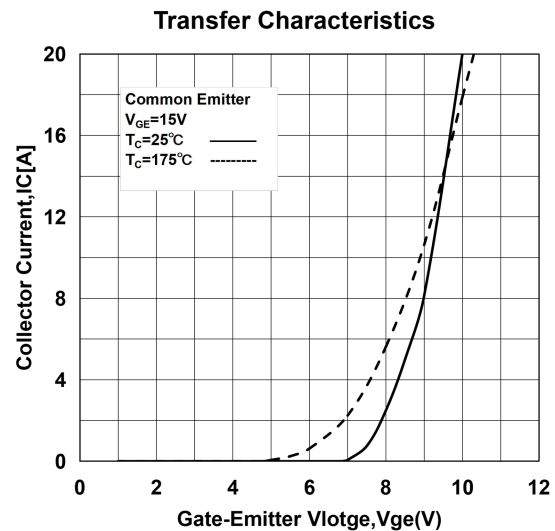
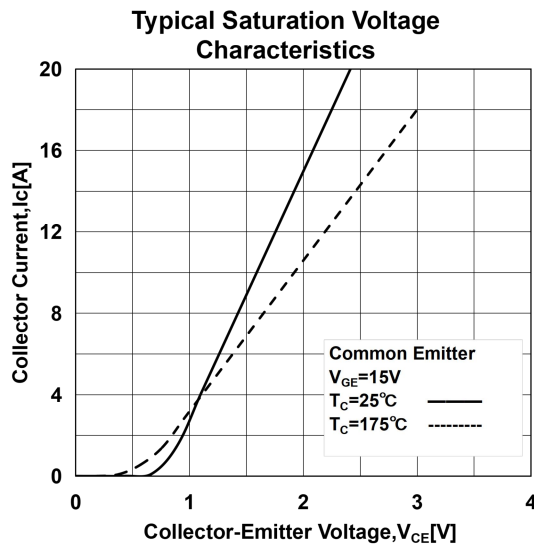
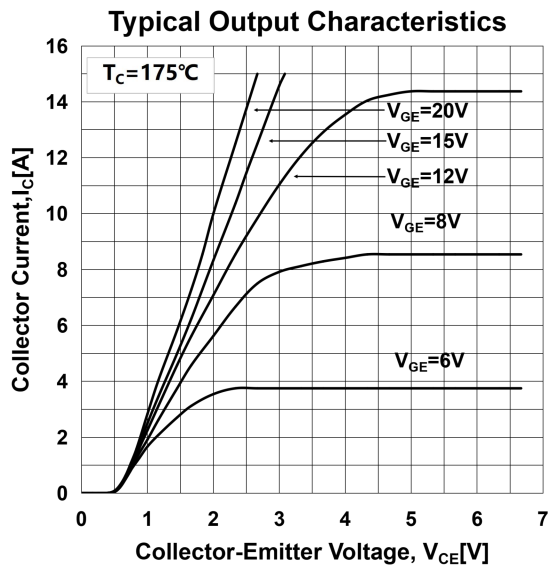
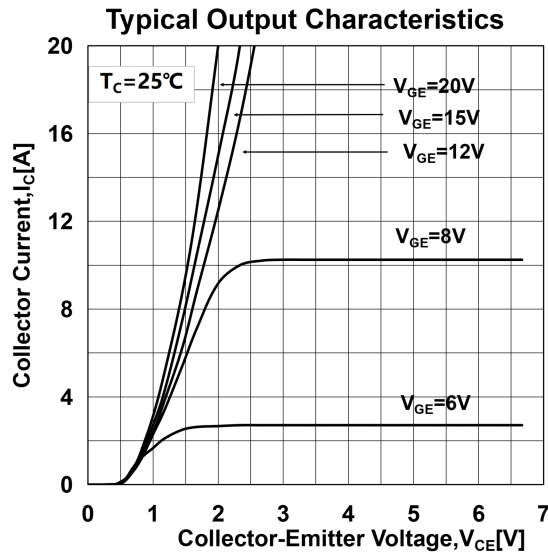
Notes:

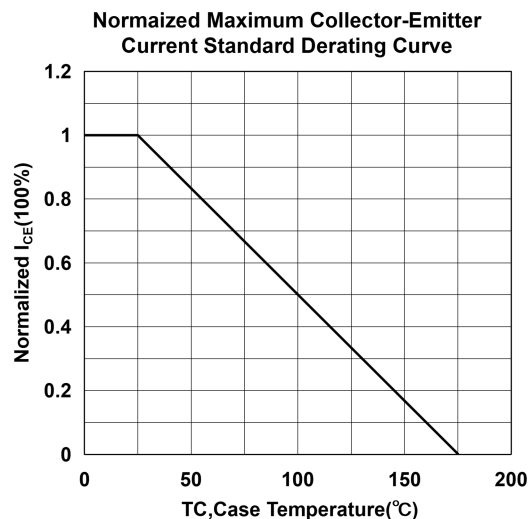
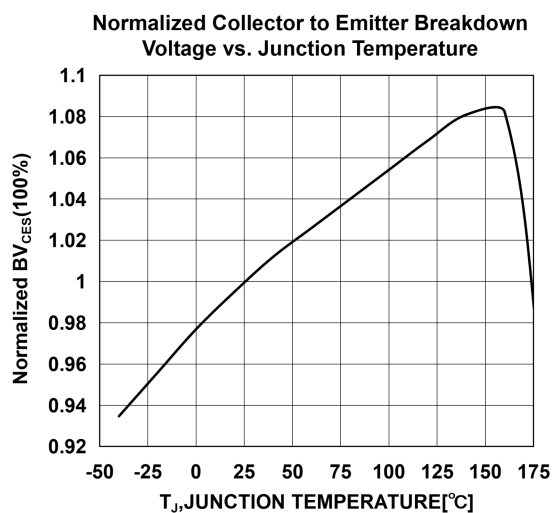
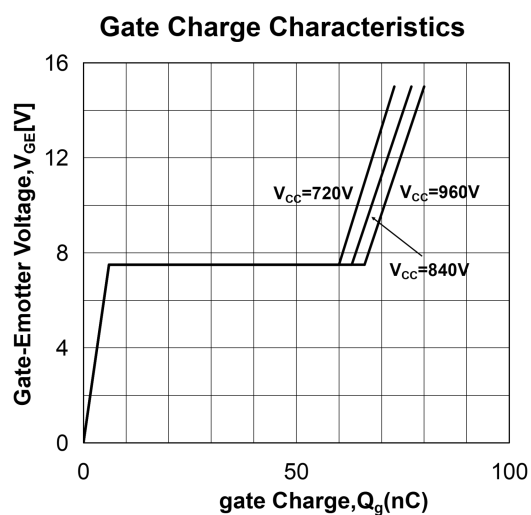
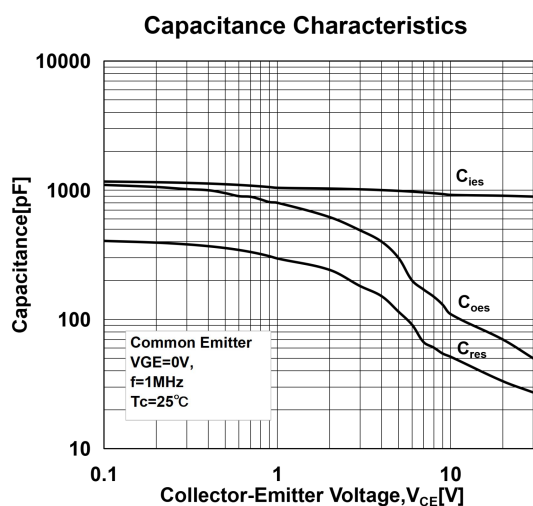
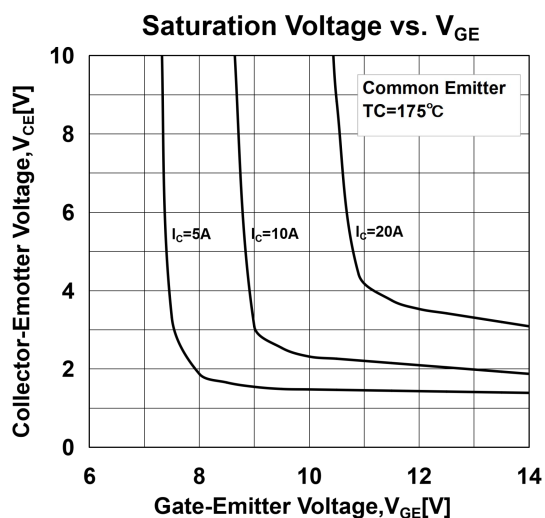
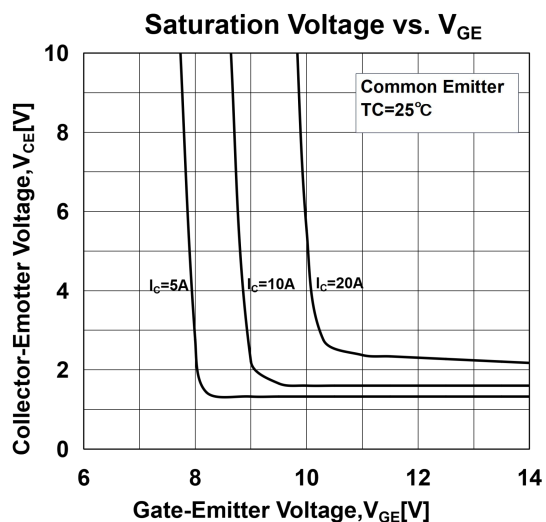
- 1: Pulse width limited by maximum junction temperature
- 2: Allowed number of short circuits: <1000; time between short circuits: >1s.
- 3: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- 4: Essentially independent of operating temperature

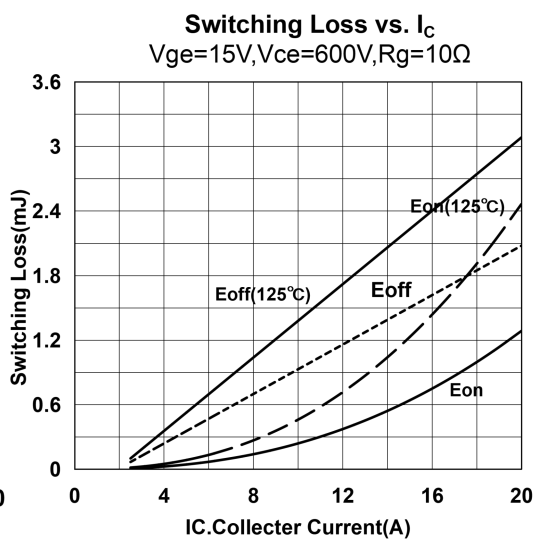
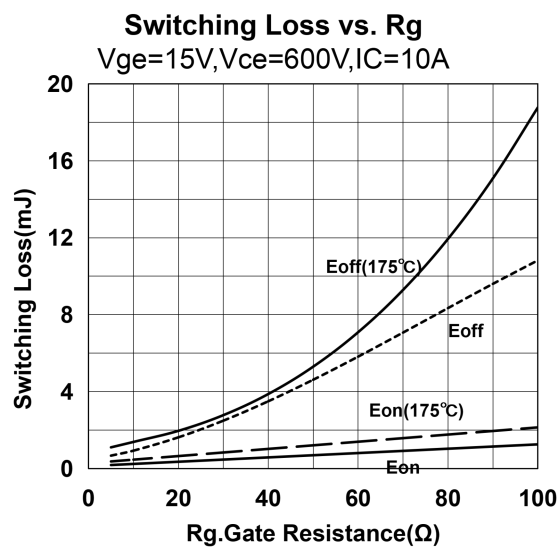
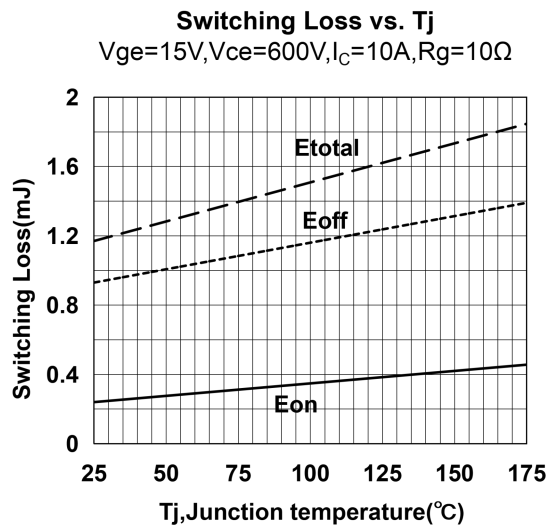
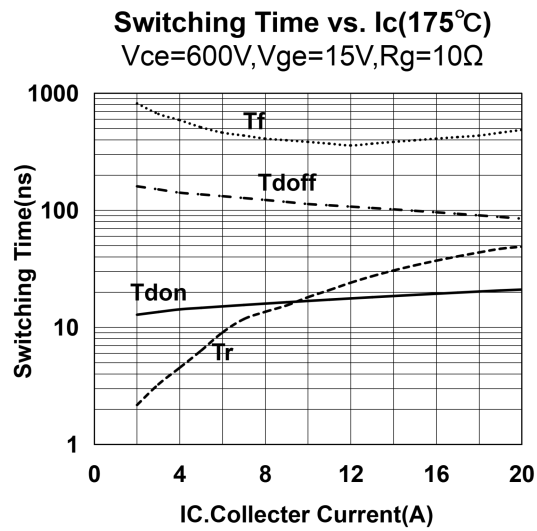
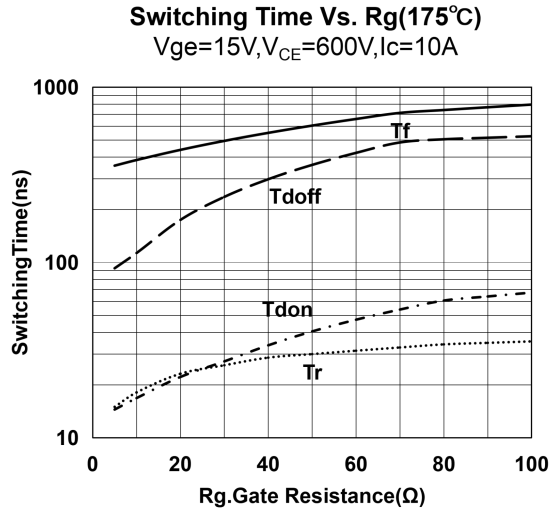
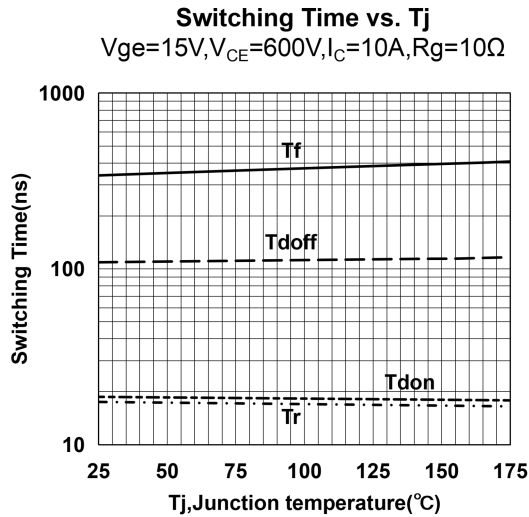
Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance junction-to-ambient	$R_{\theta JA}$	50	$^\circ C/W$
Thermal resistance junction-to-case for IGBT	$R_{\theta JC}$	1.50	

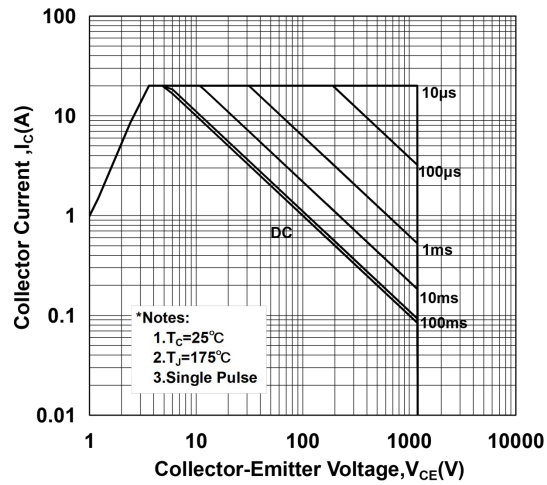
Typical Performance Characteristics



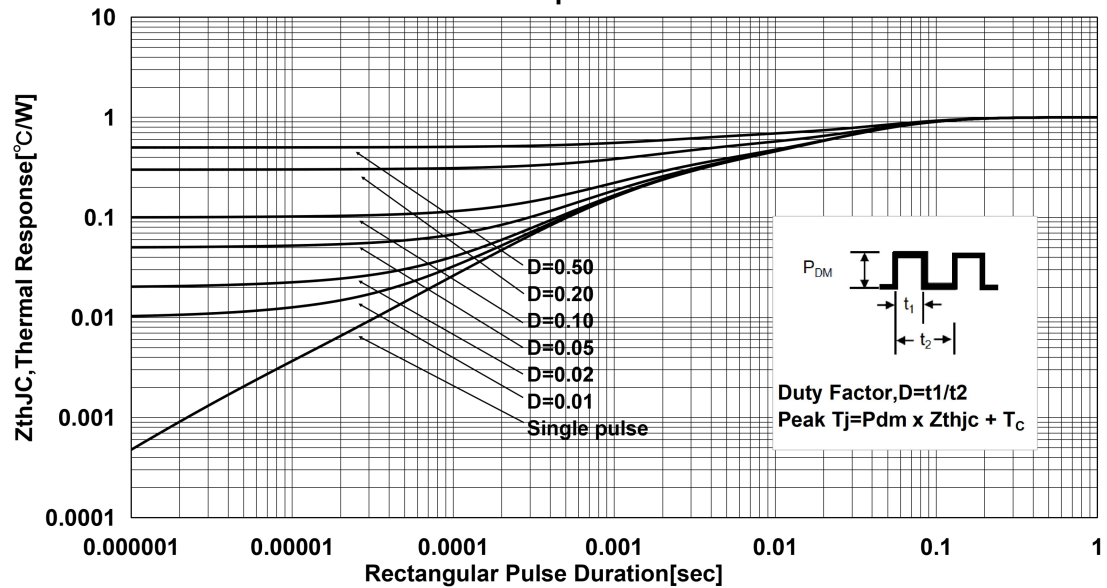




Foward Bias Safe Operating Area



Transient Thermal Impedance of IGBT



Package outline dimension

