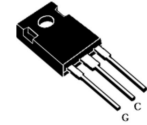


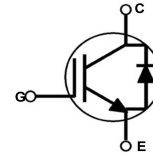
## Features

- Low Gate charge
- FS Technology
- $V_{CE(sat)} = 1.7V @ I_C = 20A$
- High Input Impedance
- Short circuit withstand time 10  $\mu s$



## Applications

- PFC
- UPS
- Inverter



## Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Collector-emitter voltage		$V_{CES}$	1200	V
Gate-emitter voltage		$V_{GES}$	$\pm 30$	
Collector curre	$T_C=25^\circ C$	$I_C$	40	A
	$T_C=100^\circ C$		20	
Pulsed collector current, pulse time limited by $T_{jmax}$		$I_{CM}$	60	
Diode forward current @ $T_C = 100^\circ C$		$I_F$	20	
Diode pulsed current, Pulse time limited by $T_{jmax}$		$I_{FM}$	120	
Power dissipati	$T_C=25^\circ C$	$P_D$	227	
	$T_C=100^\circ C$		132	
Operating Junction and storage temperature rang		$T_J$	-55 to 150	$^\circ C$
		$T_{stg}$	-55 to 150	

## Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance junction-to-ambien	$R_{\theta JA}$	62.5	$^\circ C/W$
Thermal resistance junction-to-case for IGBT	$R_{\theta JC}$	0.55	
Thermal resistance junction-to-case for Diod	$R_{\theta JC}$	0.65	

**Electrical Characteristics (T<sub>c</sub> =25°C unless otherwise specified)**

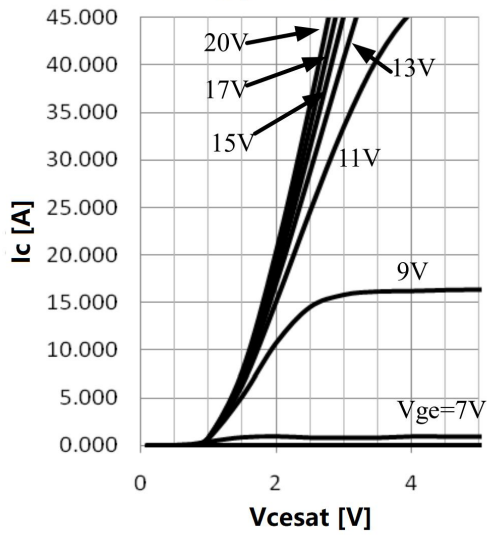
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit	
<b>Static Characteristics</b>							
Collector-emitter breakdown voltag	BV <sub>CES</sub>	I <sub>C</sub> = 500 μ A, V <sub>GE</sub> = 0V	1200	-	-	V	
Gate-emitter threshold voltage	V <sub>GE(th)</sub>	V <sub>CE</sub> = V <sub>GE</sub> , I <sub>C</sub> = 250 μ A	4.5	-	6.5		
Zero gate voltage collector current	I <sub>CES</sub>	V <sub>CE</sub> = 1200V, V <sub>GE</sub> = 0V	-	-	200	μ A	
Gate-emitter leakage current	I <sub>GES</sub>	V <sub>GE</sub> = 20V, V <sub>CE</sub> = 0V	-	-	100	nA	
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 20A V <sub>GE</sub> = 15V T <sub>C</sub> = 25°C	-	1.7	2.0	V	
		I <sub>C</sub> = 20A, V <sub>GE</sub> = 15V, T <sub>C</sub> = 150°C	-	2.0	-		
<b>Dynamic and Switching Characteristi</b>							
Total gate charg	Q <sub>g</sub>	V <sub>CE</sub> = 600V, I <sub>C</sub> = 20A, V <sub>GE</sub> = 15V	-	115	-	nC	
Reverse transfer capacitanc	C <sub>res</sub>	V <sub>GE</sub> = 15V, V <sub>CC</sub> = 600V, I <sub>C</sub> = 20A, R <sub>G</sub> = 10Ω  Inductive Load, T <sub>C</sub> = 25°C	-	92	-		
Output capacitance	C <sub>oes</sub>		-	128	-		
Turn-on delay time	t <sub>d(on)</sub>		-	90	-		nS
Rise tim	t <sub>r</sub>		-	75	-		
Turn-off delay time	t <sub>d(off)</sub>		-	210	-		
Fall time	t <sub>f</sub>		-	100	-		
Turn-on switching energy	E <sub>on</sub>			-	2.8	-	mJ
Turn-off switching energy	E <sub>off</sub>			-	1.1	-	
Total switching energ	E <sub>ts</sub>			-	3.9	-	
<b>Diode Characteristics (T<sub>c</sub> =25oC unless otherwise specified)</b>							
Forward voltag	V <sub>F</sub>	I <sub>F</sub> =20A,T <sub>C</sub> =25°C	-	1.7	2.75	V	
		I <sub>F</sub> =20A,T <sub>C</sub> =125°C	-	1.55	-		
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> =20A,di/dt=100A/μS T <sub>C</sub> =25°C	-	227	-	nS	
Reverse recovery current	I <sub>rr</sub>		-	4.6	-	A	
Reverse recovery charge	Q <sub>rr</sub>		-	1200	-	nC	

**Notes:**

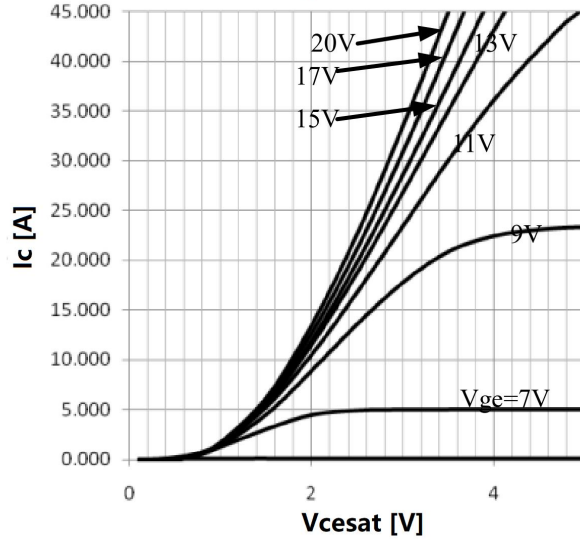
- 1: Pulse width limited by maximum junction temperature
- 2: Allowed number of short circuits: <1000; time between short circuits: >1s.
- 3: Pulse Test: Pulse Width ≤300μs,Duty Cycle≤2%
- 4: Essentially independent of operating temperature

## Typical Performance Characteristic

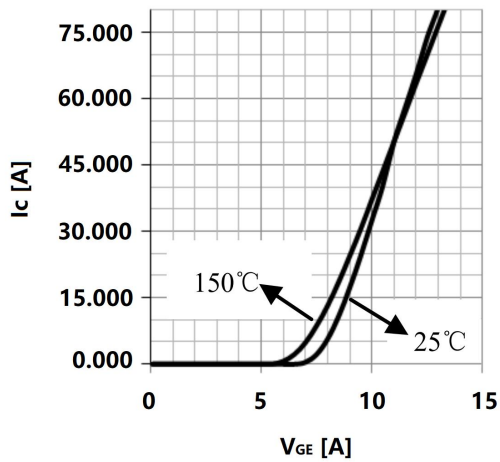
**Typical Output Characteristics**  
[T<sub>j</sub> = 25°C]



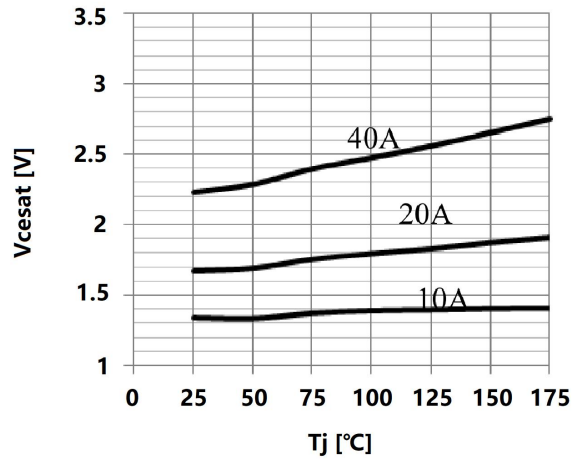
**Typical Output Characteristics**  
[T<sub>j</sub> = 150°C]

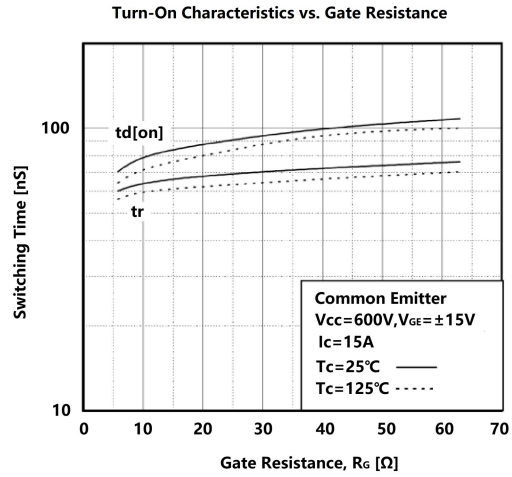
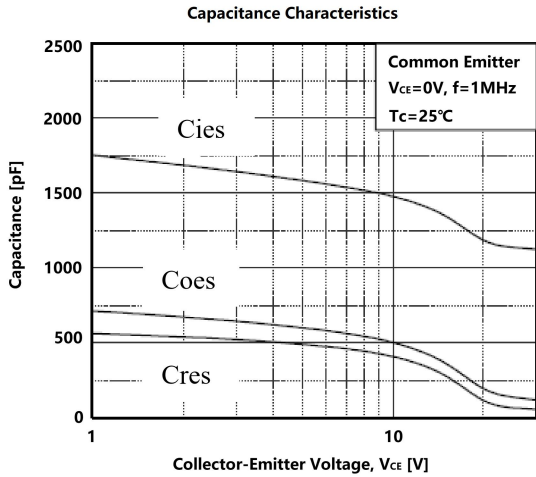


**Typical Saturation Voltage Characteristics**

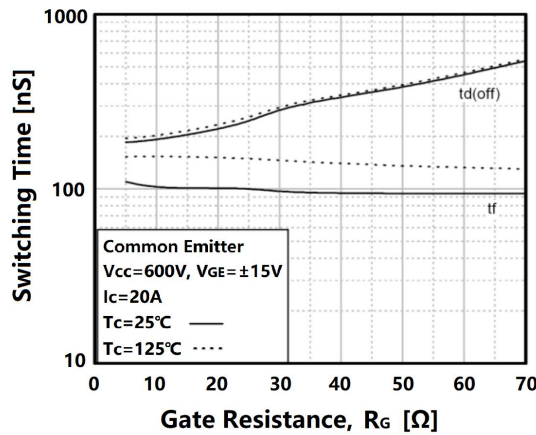


**Saturation Voltage vs. Case Temperature at Variant Current Level**

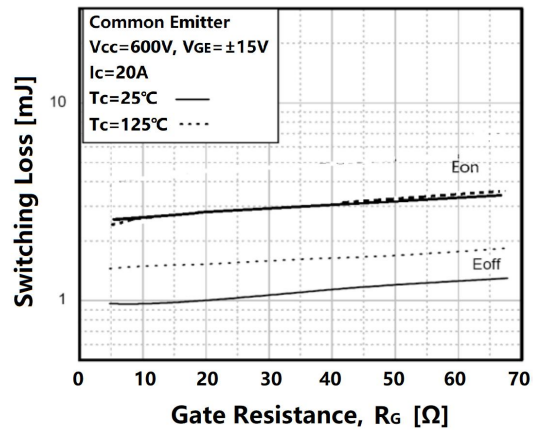




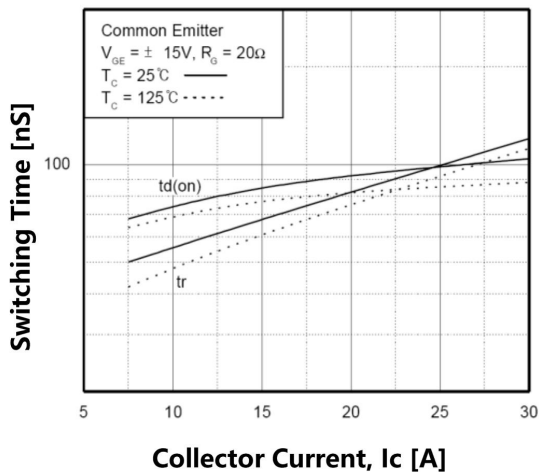
**Turn-Off Characteristics vs. Gate Resistance**



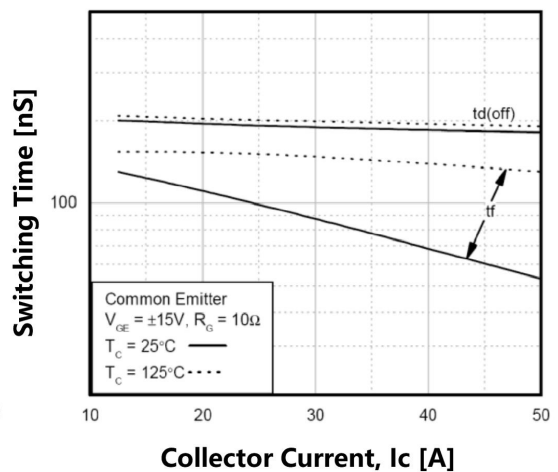
**Switching Loss vs. Gate Resistance**



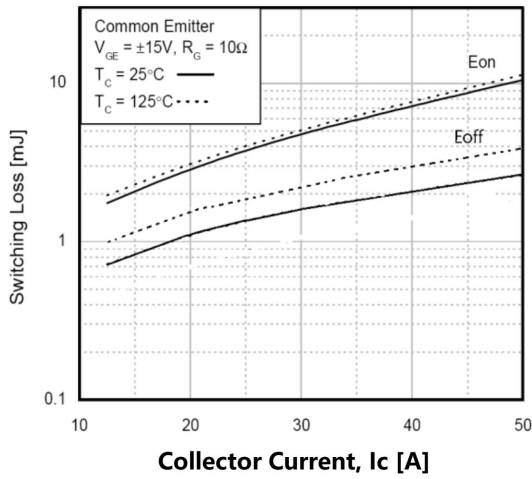
**Turn-On Characteristics vs. Collector Current**



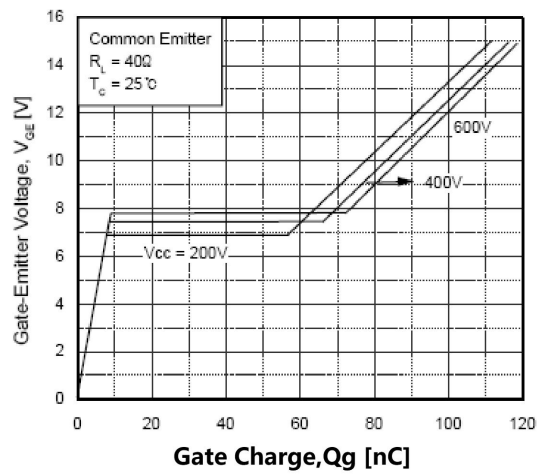
**Turn-Off Characteristic vs. Collector Current**



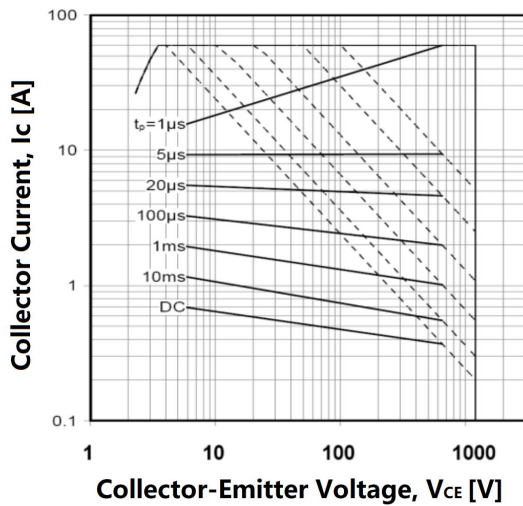
**Switching Loss vs. Collector Current**



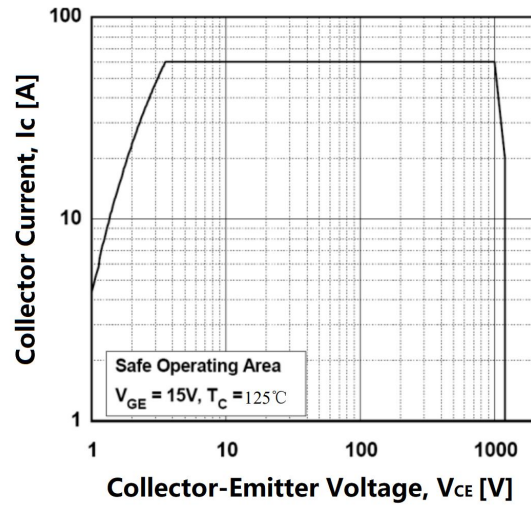
**Gate Charge Characteristics**



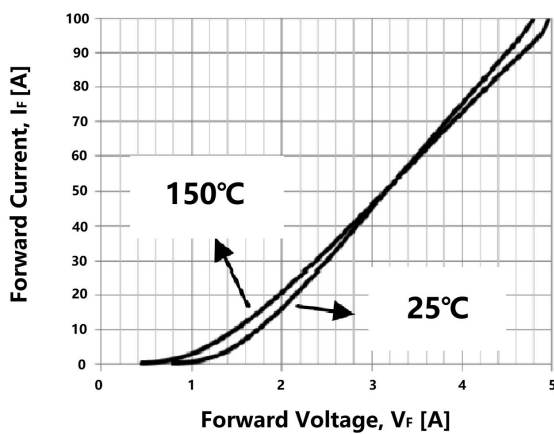
**SOA Characteristics**



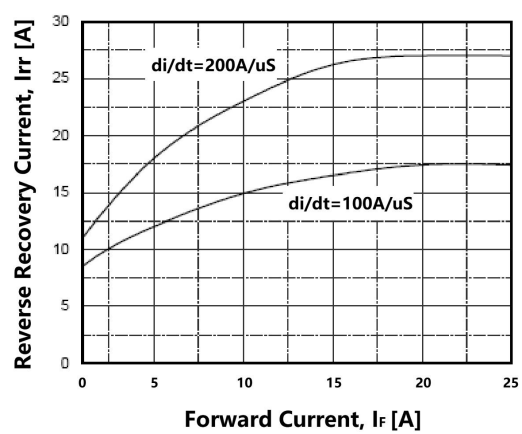
**Turn-Off SOA**

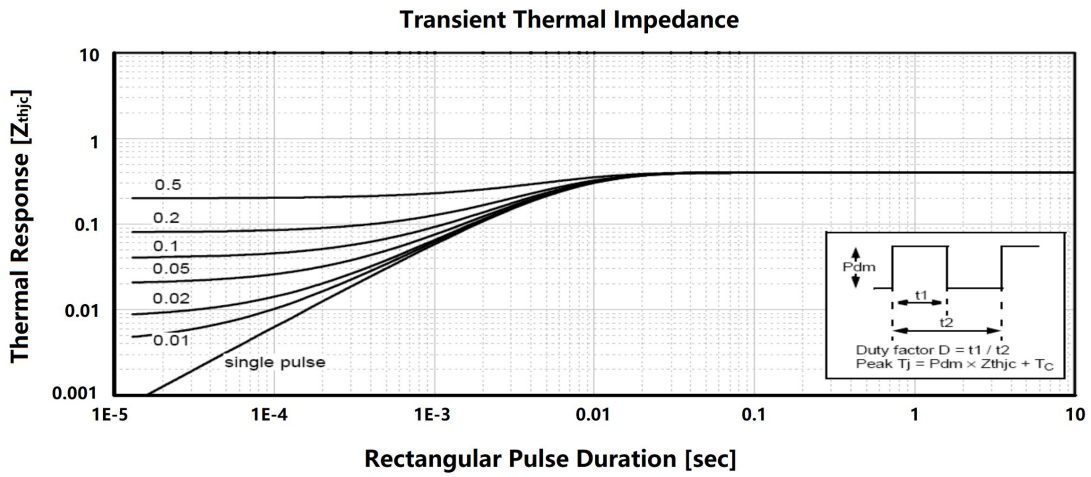
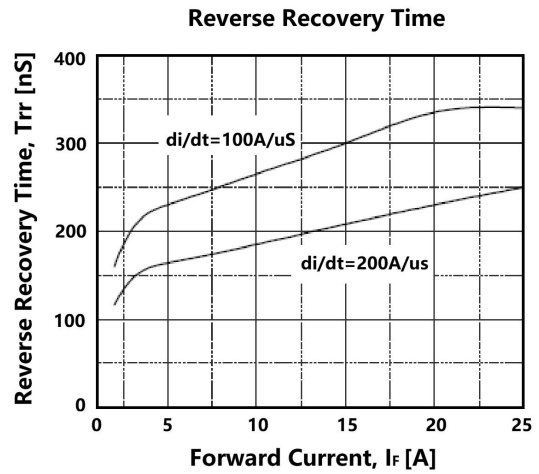
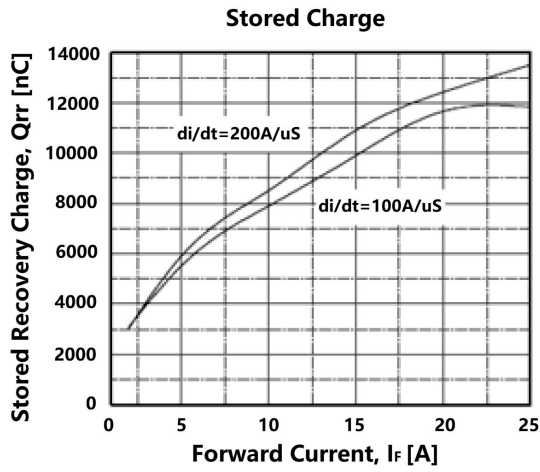


**Forward Characteristics**



**Reverse Recovery Current**





### Package outline dimension

