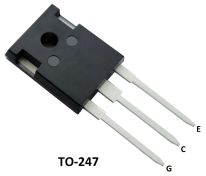
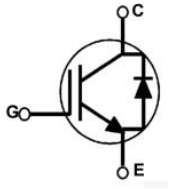
Features



- High Current Capability
- Low Saturation Voltage:
  VCE(sat) = 1.55 V @ IC = 50 A
- High Input Impedance
- RoHS Complaint



Applications

- PDP TV

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Collector to Emitter Voltage		V_{CES}	330	V
Gate to Emitter Voltage		V_{GES}	±30	
Collector Current	T_C=25℃	I_C	100	A
	T_C=100℃		50	
Pulsed Collector Current TC=25℃		I_{CM}	200	
Maximum Power Dissipation TC=25℃		P_D	302	W
Maximum Power Dissipation TC=100℃			138	
Operating Junction Temperature		T_J	-55 to 150	℃
Storage Temperature Range		T_{stg}	-55 to 150	
Maximum Lead Temp. for soldering Purposes, 1/8” from case for 5 seconds		T_L	300	

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$(IGBT)	-	0.38	℃/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$(Diode)	-	1.1	

Package Marking and Ordering Information

Device Marking	Device	Package	MOQ
MSG50N350HLC0	MSG50N350HLC0	TO-247	

Electrical Characteristics of the IGBT T_C = 25°C unless otherwise noted

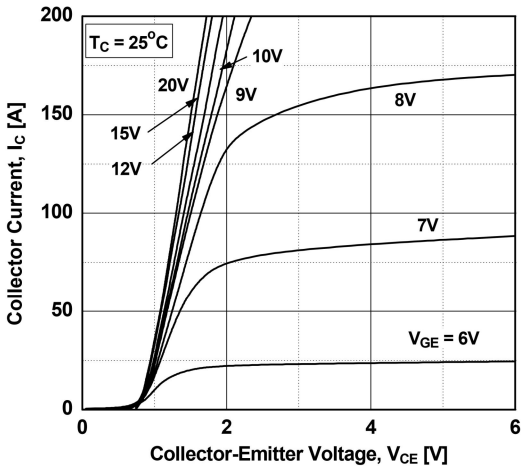
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
On/off Characteristics						
G-E Threshold Voltag	$V_{GE(th)}$	I_C = 250uA, V_{CE} = V_{GE}	2.5	4	5.5	V
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 50A, V_{GE} = 15V	-	1.55	-	
Collector to Emitter Breakdown Voltage	B_{VCE}	V_{GE} = 0V, I_C = 250μA	330	-	-	
Collector Cut-Off Current	I_{CES}	V_{CE} = V_{CES}, V_{GE} = 0	-	-	100	μA
G-E Leakage Current	I_{GES}	V_{GE} = V_{GES}, V_{CE} = ±30V	-	-	±100	nA
Dynamic Characteristics						
Input Capacitance	Cies	VCE = 30V, VGE = 0V f = 1MHz	-	4600	-	pF
Output Capacitance	Coes		-	2100	-	
Reverse Transfer Capacitance	Cres		-	96	-	
Switching Characteristics						
Turn-On Delay Time	td(on）	VCC = 200V, IC = 40A, RG = 5Ω, VGE = 15V, Resistive Load, TC = 25℃	-	78	-	nS
Rise Time	tr		-	93	-	
Turn-Off Delay Time	td(off)		-	142	-	
Turn-Off Fall Time	tf			146		
Total Gate Charge	Qg	VCE = 200V, IC = 40A, VGE = 15V	-	175	-	nC

Electrical Characteristics of the Diode T_C = 25°C unless otherwise noted

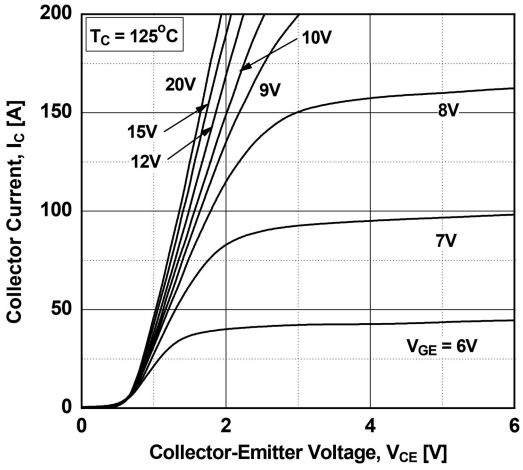
Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Diode Forward Voltage	V_{FM}	I_F = 30A	T_C=25℃	-	1.0	1.4	V
			T_C=125℃	-	0.9	-	
Diode Reverse Recovery Time	t_{rr}	I_F =20A, di_F/dt = 200A/μs	T_C=25℃	-	35	-	ns
			T_C=125℃	-	53	-	
Diode Peak Reverse Recovery Cyrrent	I_{rr}		T_C=25℃	-	4	-	A
			T_C=125℃	-	6	-	
Diode Reverse Recovery Charge	Q_{rr}		T_C=25℃	-	50	-	nC
			T_C=125℃	-	120	-	

Typical Performance Characteristics

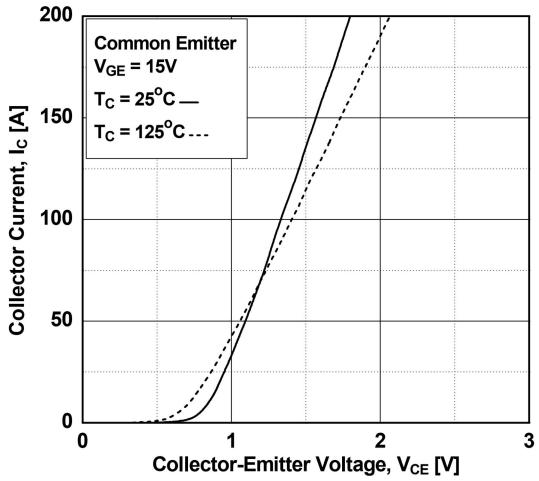
Typical Output Characteristics



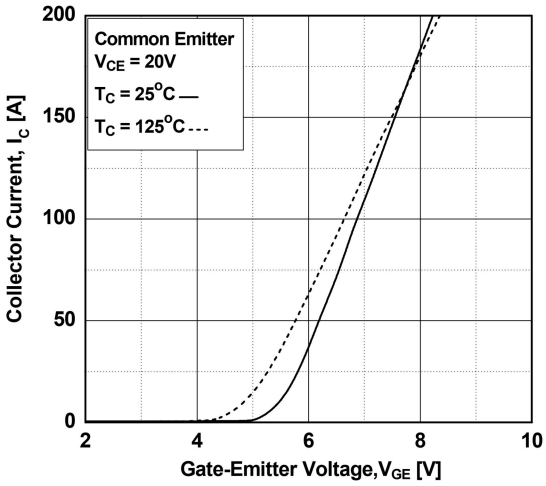
Typical Output Characteristics



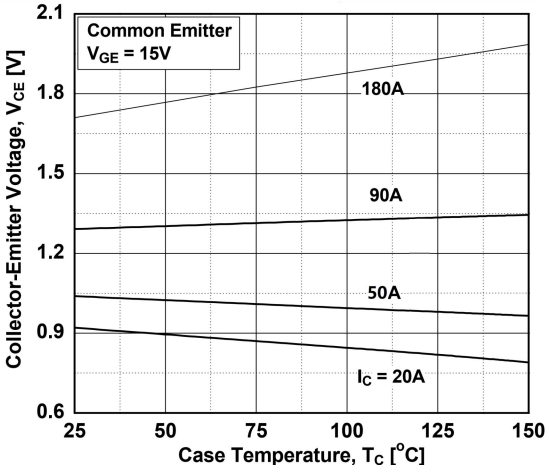
Typical Saturation Voltage Characteristics



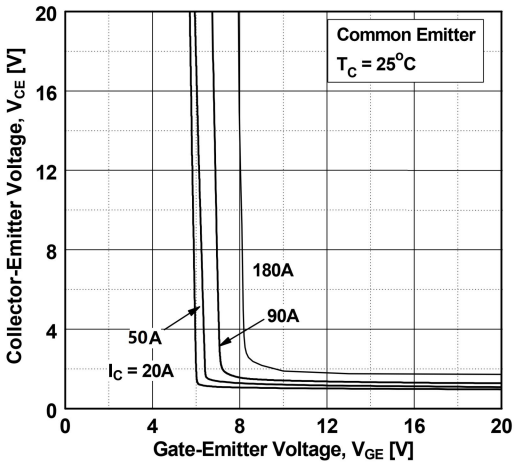
Transfer Characteristics



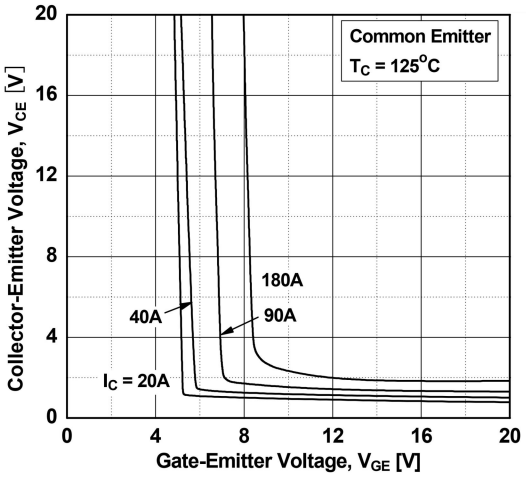
Saturation Voltage vs. Case Temperature at Variant Current Level



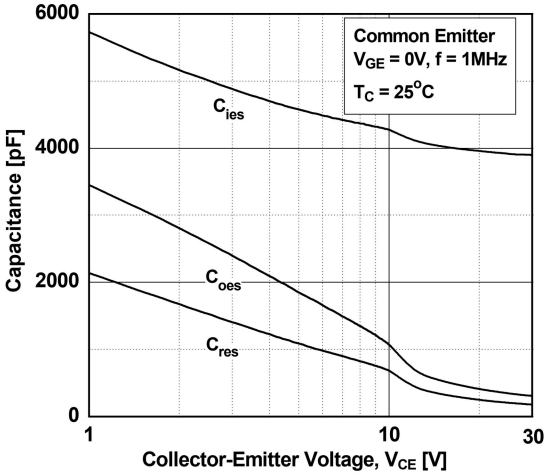
Saturation Voltage vs. V_{GE}



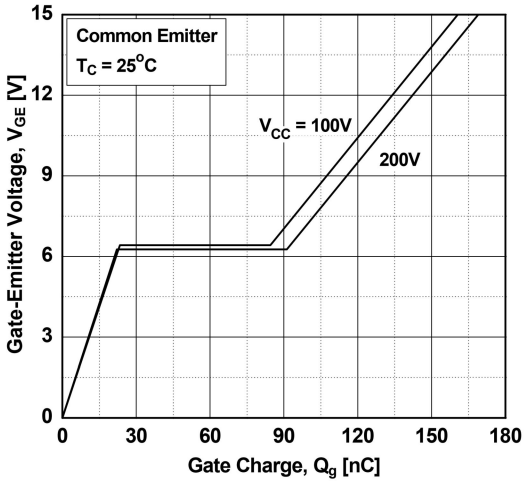
Saturation Voltage vs. V_{GE}



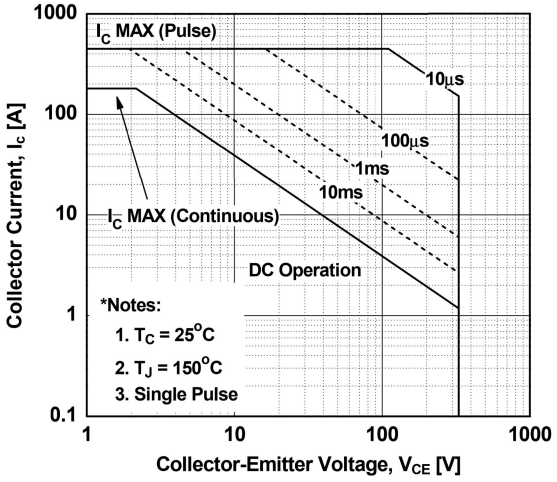
Capacitance Characteristics



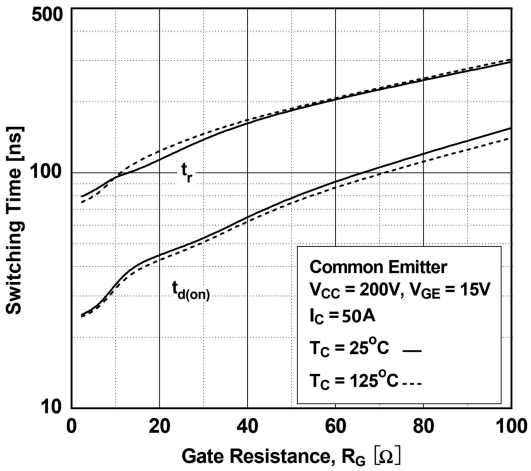
Gate charge Characteristics



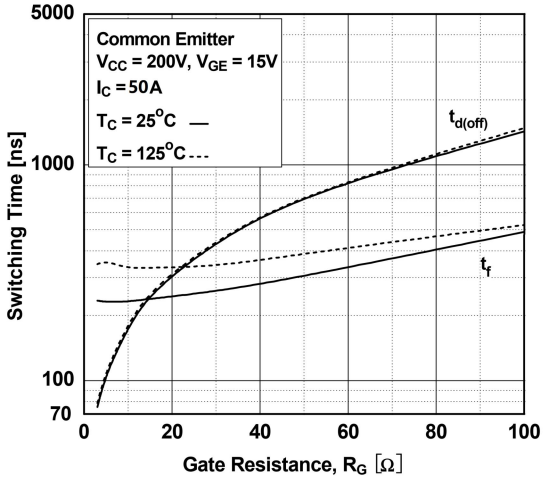
SOA Characteristics



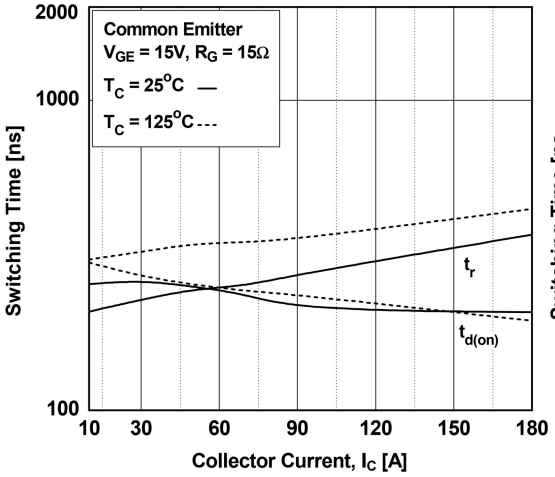
Turn-on Characteristics vs. Gate Resistance



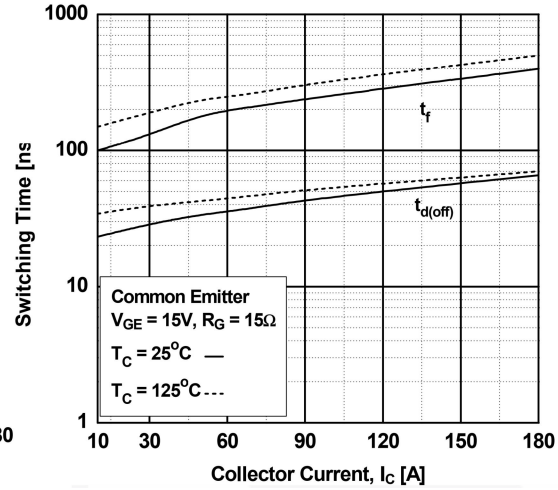
Turn-off Characteristics vs Gate Resistance



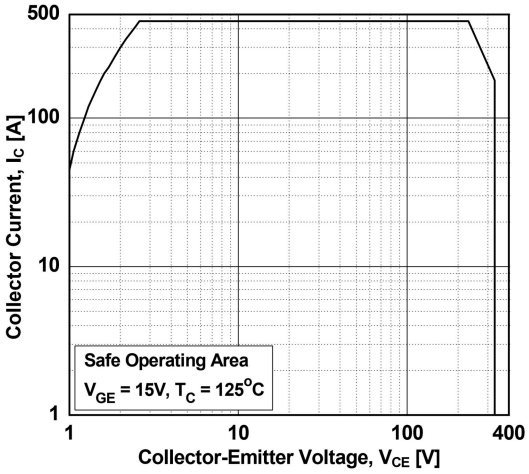
Turn-on Characteristics vs. Collector Current



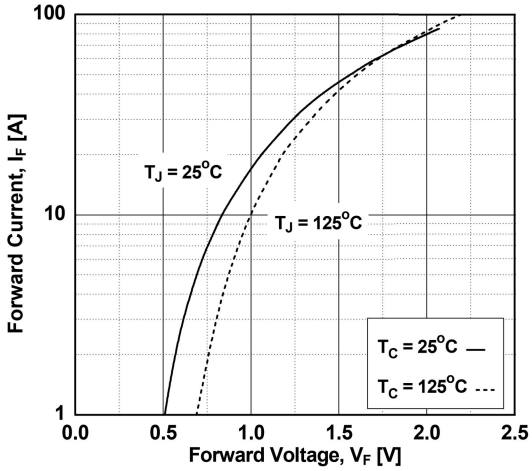
Turn-off Characteristics v Collector Current



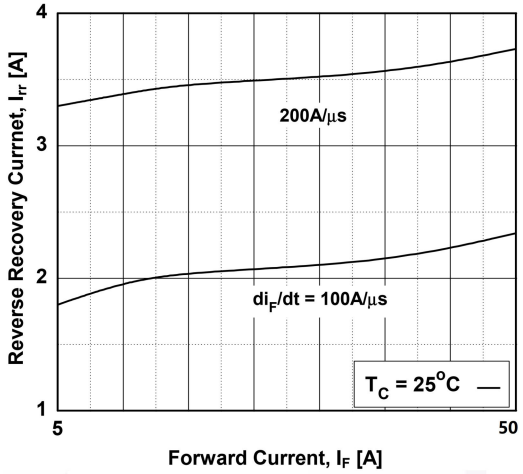
Turn off Switching SOA Characteristics



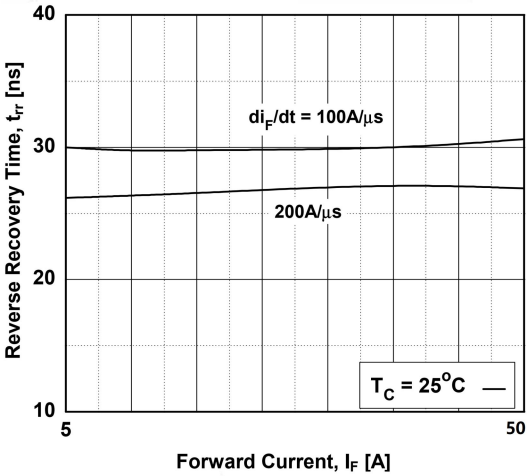
Forward Characteristics

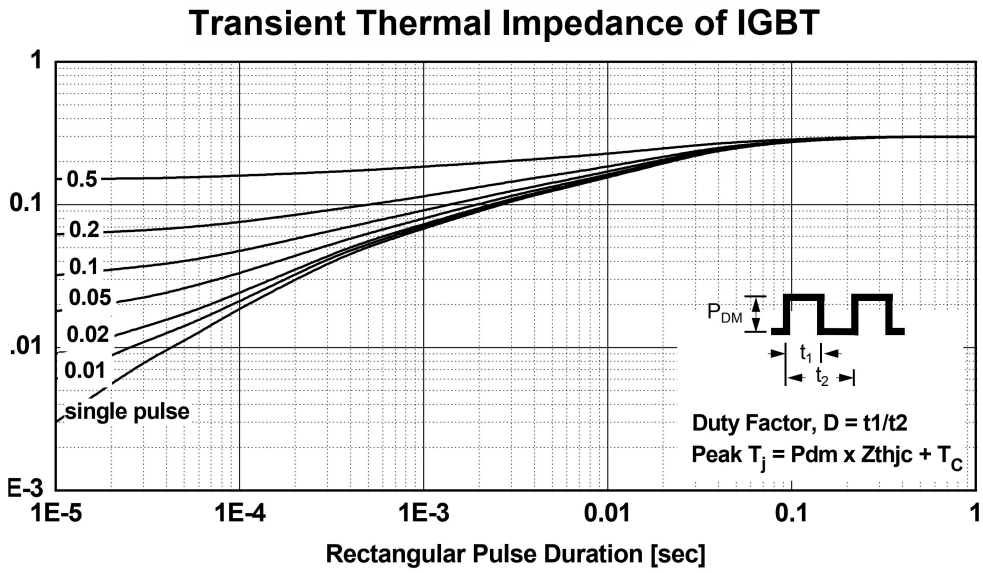


Reverse Recovery Current



Reverse Recovery Time





Package outline dimension