All ratings @ T_j = 25°C unless otherwise specified

Electrical Characteristics

Symbol	*Characteristic*	*Test Conditions*		*Min*	*Typ*	*Max*	*Unit*
I_{CES}	Zero Gate Voltage Collector Current	V_{GE} = 0V ; V_{CE} = 1200V				4	mA
$V_{CE(sat)}$	Collector Emitter Saturation Voltage	V_{GE} =15V I_C = 400A	T_j = 25°C		1.8	2.2	V
			T_j = 150°C		2.2		
$V_{GE(th)}$	Gate Threshold Voltage	V_{GE} = V_{CE}, I_C = 10 mA		5	5.8	6.5	V

Dynamic Characteristics

Symbol	*Characteristic*	*Test Conditions*		*Min*	*Typ*	*Max*	*Unit*
C_{ies}	Input Capacitance	V_{GE} = 0V V_{CE} = 25V f = 1MHz			24.6		nF
C_{oes}	Output Capacitance				1.62		
C_{res}	Reverse Transfer Capacitance				1.38		
Q_G	Gate charge	V_{GE}=±15V			3.4		µC
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C) V_{GE} = ±15V V_{CE} = 600V I_C = 400A R_G = 1.8Ω			160		ns
T_r	Rise Time				30		
$T_{d(off)}$	Turn-off Delay Time				340		
T_f	Fall Time				80		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (150°C) V_{GE} = ±15V V_{CE} = 600V I_C = 400A R_G = 1.8Ω			170		ns
T_r	Rise Time				40		
$T_{d(off)}$	Turn-off Delay Time				450		
T_f	Fall Time				170		
E_{on}	Turn-on Switching Energy	V_{GE} = ±15V V_{CE} = 600V I_C = 400A R_G = 1.8Ω	T_J = 25°C		20.8		mJ
			T_J = 150°C		42		
E_{off}	Turn-off Switching Energy		T_J = 25°C		22		mJ
			T_J = 150°C		37.2		
I_{SC}	Short circuit current	V_{GE}≤15V ; V_{CC}=900V t_p≤10µs ; T_j=150°C			2000		A

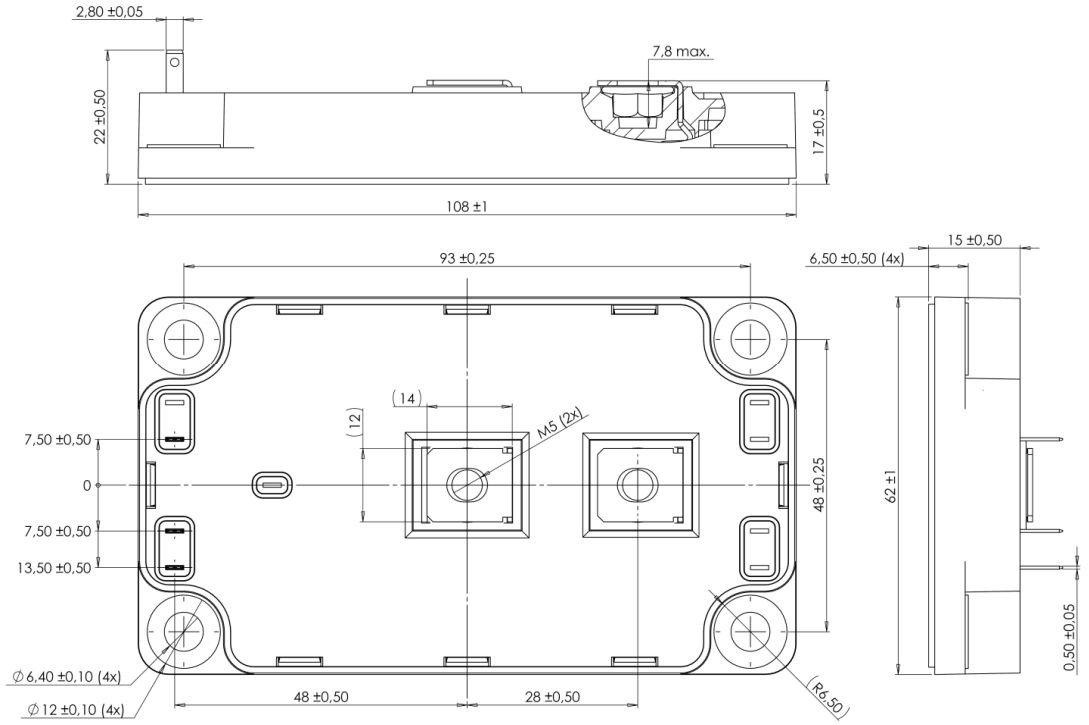
Series diode ratings and characteristics

Symbol	*Characteristic*	*Test Conditions*		*Min*	*Typ*	*Max*	*Unit*
V_{RRM}	Maximum Repetitive Reverse Voltage			1200			V
I_{RM}	Maximum Reverse Leakage Current	V_R=1200V	T_j = 25°C			400	µA
			T_j = 125°C			2000	
I_F	DC Forward Current		T_j = 90°C		360		A
V_F	Diode Forward Voltage	I_F = 360A			2.5	3	V
		I_F = 720A			3		
		I_F = 360A	T_j = 125°C		1.8		
t_{rr}	Reverse Recovery Time	I_F = 360A V_R = 800V di/dt = 1200A/µs	T_j = 25°C		265		ns
			T_j = 125°C		350		
Q_{rr}	Reverse Recovery Charge		T_j = 25°C		3.3		µC
			T_j = 125°C		17.3		

Thermal and package characteristics

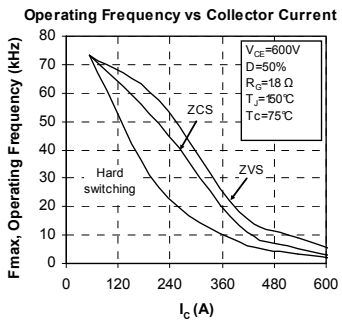
Symbol	*Characteristic*			*Min*	*Typ*	*Max*	*Unit*
R_{thJC}	Junction to Case Thermal Resistance		IGBT			0.065	°C/W
			Series diode			0.13	
V_{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, 50/60Hz			4000			V
T_J	Operating junction temperature range			-40		175	°C
T_{STG}	Storage Temperature Range			-40		125	
T_C	Operating Case Temperature			-40		100	
Torque	Mounting torque	To Heatsink	M6	3		5	N.m
		For teminals	M5	2		3.5	
Wt	Package Weight					300	g

SP6 Package outline (dimensions in mm)

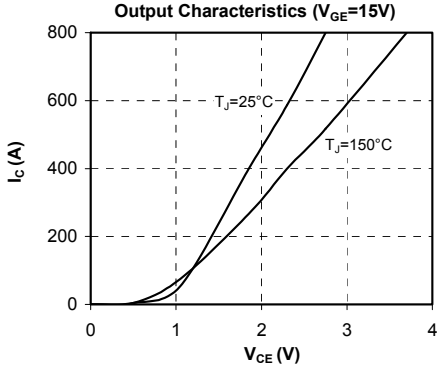


See application note APT0601 - Mounting Instructions for SP6 Power Modules on www.microsemi.com

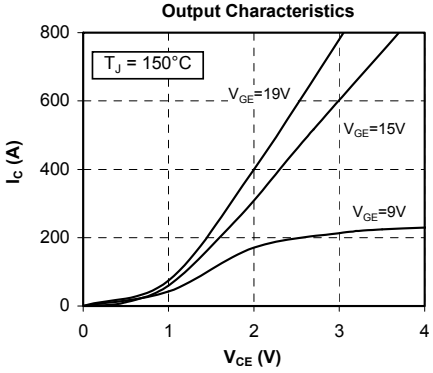
Typical IGBT Performance Curve



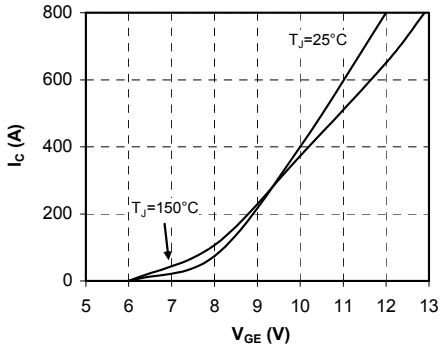
Output Characteristics (V_{GE}=15V)



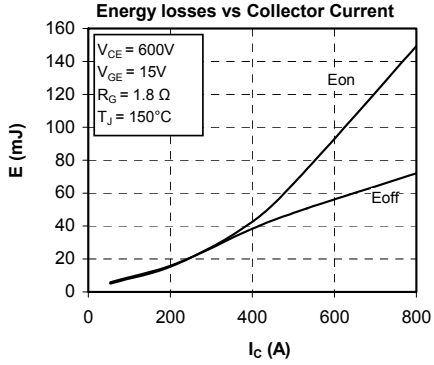
Output Characteristics



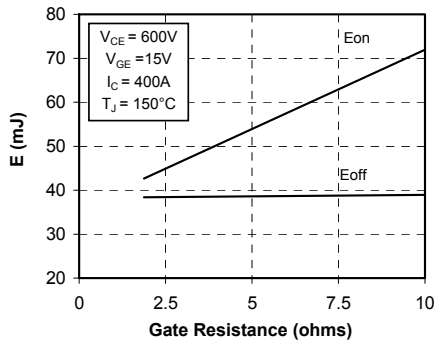
Transfert Characteristics



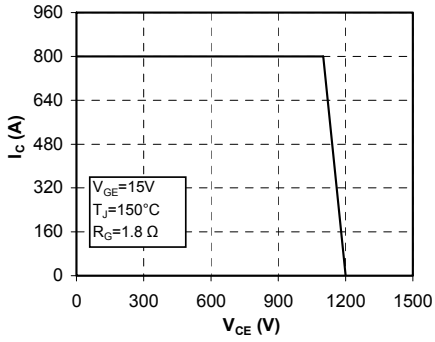
Energy losses vs Collector Current



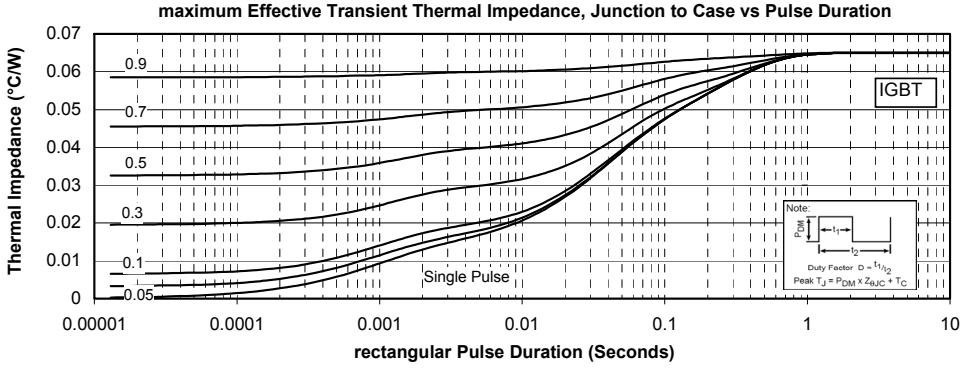
Switching Energy Losses vs Gate Resistance



Reverse Bias Safe Operating Area

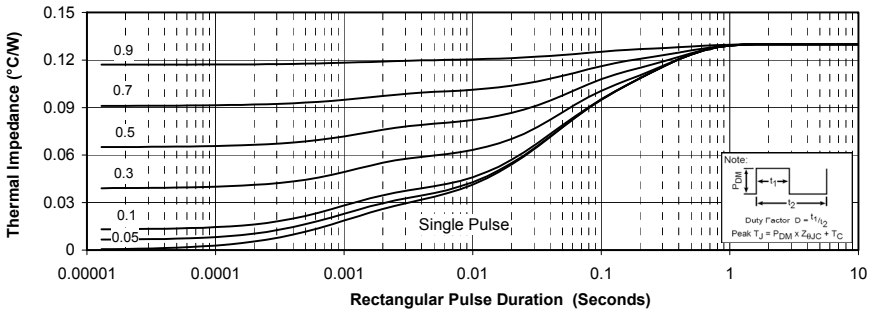


maximum Effective Transient Thermal Impedance, Junction to Case vs Pulse Duration

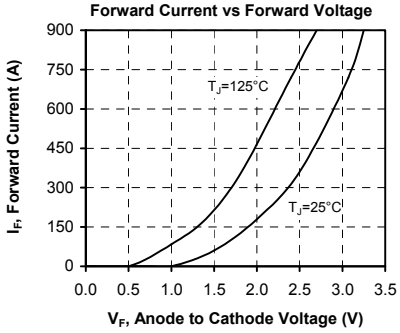


Typical Series diode Performance Curve

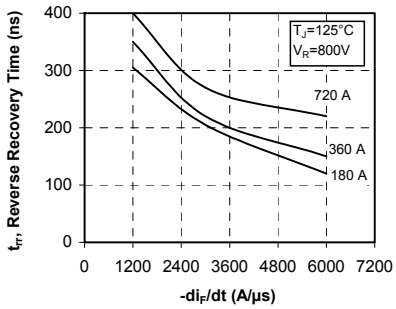
Maximum Effective Transient Thermal Impedance, Junction to Case vs Pulse Duration



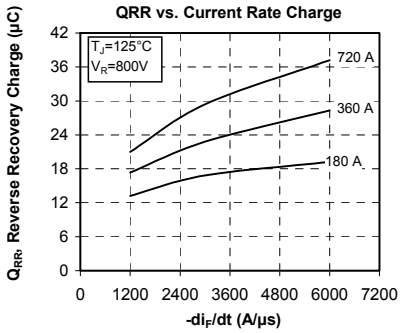
Forward Current vs Forward Voltage



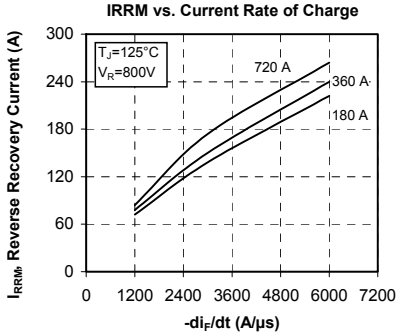
Trr vs. Current Rate of Charge



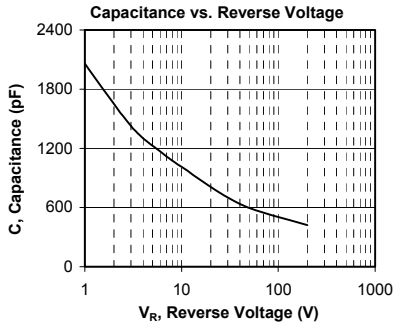
QRR vs. Current Rate Charge



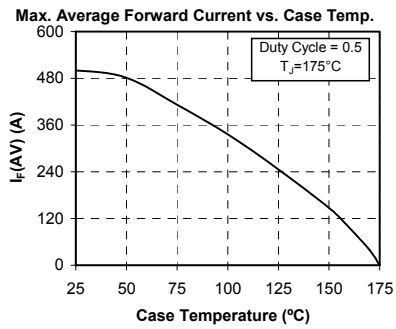
IRRM vs. Current Rate of Charge



Capacitance vs. Reverse Voltage



Max. Average Forward Current vs. Case Temp.



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