PIN FUNCTION DESCRIPTION

Pin	Name	Description
1	S1	Q1 Kelvin Emitter (High side switch)
2	G1	

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
SiC MOSFET			
Drain−Source Voltage	V_{DSS}	1200	V
Gate−Source Voltage	V_{GS}	+22/−10	V
Continuous Drain Current @ T_c = 80 °C (T_J = 175 °C)	I_D	191	A
Pulsed Drain Current (T_J = 175 °C)	I_{Dpulse}	382	A
Maximum Power Dissipation @ T_c = 80 °C (T_J = 175 °C)	P_{tot}	556	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C

ELECTRICAL CHARACTERISTICS (T_J = 25 °C unless otherwise noted) (continued)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
SiC MOSFET CHARACTERISTICS						
Total Gate Charge	V_{DS} = 800 V, V_{GS} = −5/20 V, I_D = 100 A	$Q_{G(TOTAL)}$	–	622	–	nC
Gate−Source Charge		Q_{GS}	–	109	–	nC
Gate−Drain Charge		Q_{GD}	–	120	–	nC
Turn−on Delay Time	T_J = 25 °C V_{DS} = 600 V, I_D = 100 A V_{GS} = −5 V / 18 V, R_G = 1	$t_{d(on)}$	–	40.53	–	ns
Rise Time		t_r	–	13.61	–	
Turn−off Delay Time		$t_{d(off)}$	–	109	–	
Fall Time		t_f	–	8.54	–	
Turn−on Switching Loss per Pulse		E_{ON}	–	0.89	–	mJ
Turn−off Switching Loss per Pulse		E_{OFF}	–	0.44	–	
Turn−on Delay Time	T_J = 150 °C V_{DS} = 600 V, I_D = 100 A V_{GS} = −5 V / 18 V, R_G = 1	$t_{d(on)}$	–	38.21	–	ns
Rise Time		t				

TYPICAL CHARACTERISTIC
(M1/M2 SiC MOSFET CHARACTERISTIC)

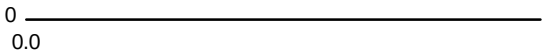


Figure 2. MOSFET Typical Output Characteristic

Figure 3. MOSFET Typical Output Characteristic

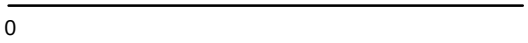


Figure 4. MOSFET Typical Transfer Characteristic

Figure 5. Body Diode Forward Characteristic

Figure 6. MOSFET R

TYPICAL CHARACTERISTIC
(M1/M2 SiC MOSFET CHARACTERISTIC)

T

Figure 8. MOSFET $R_{DS(ON)}$ vs. T_j

Figure 9. Gate ïto ïSource Voltage vs. Total Charge

Figure 10. Capacitance vs. Drain ïto ïSource Voltage

Figure 11. MOSFET Junction ïto ïCase Transient Thermal Impedance

TYPICAL CHARACTERISTIC

(M1/M1 SiC MOSFET SWITCHING CHARACTERISTIC)

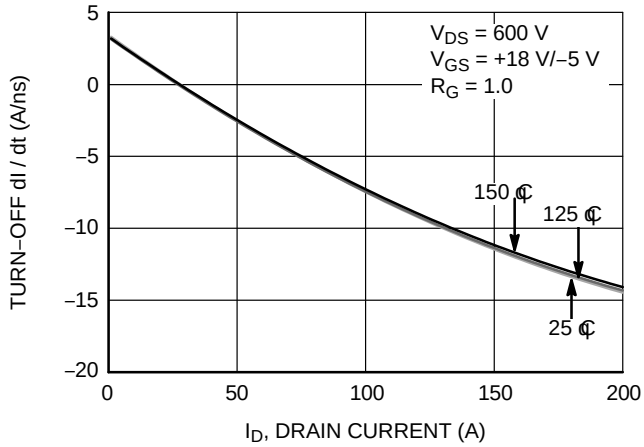


Figure 18. di/dt OFF vs. I_D

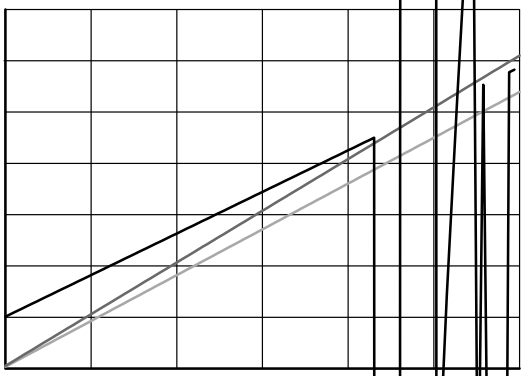


Figure 19. di/dt OFF vs. R_G

TURN−ON dV / dt (V/ns)

Figure 20. dv/dt ON vs. I_D

Figure 21. dv/dt ON vs. R_G

TURN−OFF dV / dt (V/ns)

Figure 22. dv/dt OFF vs. I_D vs. I_D

Figure 23. dv/dt OFF vs. I_D vs. R_G

TYPICAL CHARACTERISTIC

(M1/M1 SiC MOSFET SWITCHING CHARACTERISTIC)

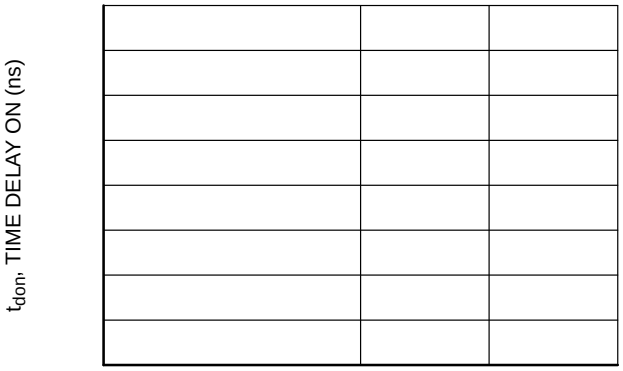


Figure 24. Typical Switching Loss t_{don} vs. I_D

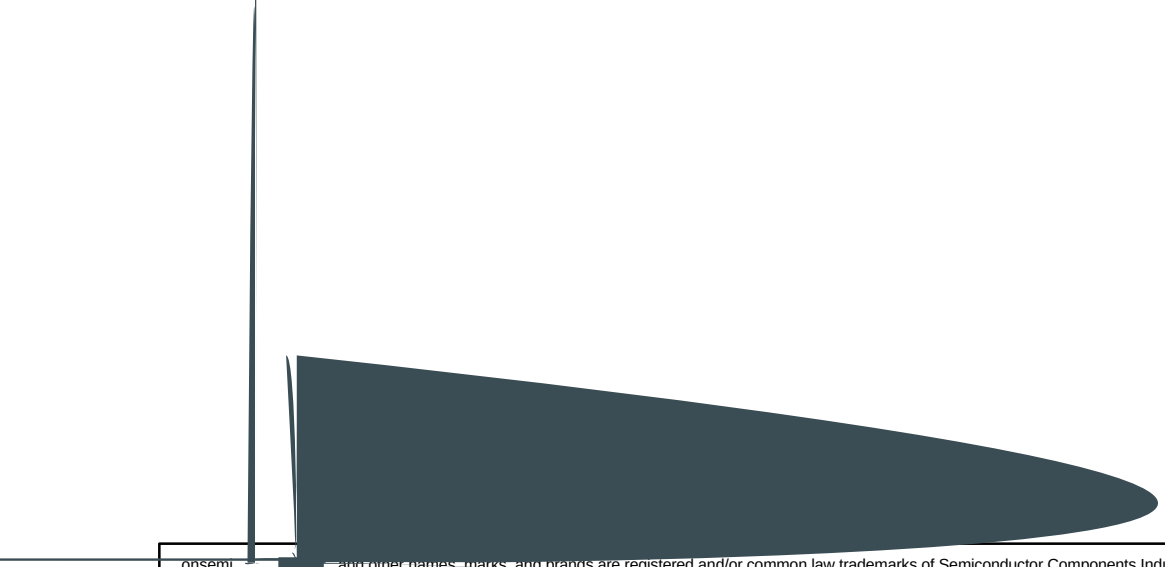
Figure 25. Typical Switching Loss t_{don} vs. R_G

Figure 26. Typical Switching Loss t_{doff} vs. I_D

Figure 27. Typical Switching Loss t_{doff} vs. R_G

Figure 28. Typical Switching Loss t_r vs. I_D

Figure 29. Typical Switching Loss t_r vs. R_G



ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS :
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales