

Product Summary

V_{(BR)DSS}	R_{DS(on)MAX}	I_{D@25°C}
1200V	48mΩ@18V	55A

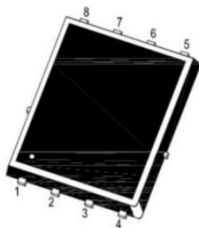
Feature

- Wide bandgap SiC MOSFET technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed switching
- Low reverse recovery(Qrr)

Application

- Switch Mode Power Supplies
- Renewable Energy
- Motor drives
- High Voltage DC/DC Converters

Package

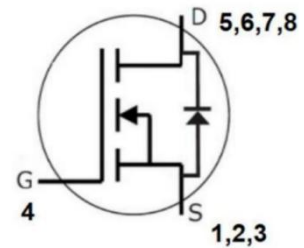


DFN5*6

Marking



Circuit diagram



Absolute maximum ratings (T_C=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Value	Unit
Drain-Source Voltage	V _{DS}	V _{GS} = 0V, I _D = 100μA	1200	V
Gate-Source Voltage	V _{GSmax}	AC (f > 1 Hz)	-10/+25	V
Gate-Source Voltage	V _{GSOP}	Static	-4/+18	V
Continuous Drain Current	I _D	V _{GS} = 18V, T _C =25°C	55	A
	I _D	V _{GS} = 18V, T _C =100°C	39	
Pulsed Drain Current	I _{D,pulse}	Pulse with t _p limited by T _{Jmax} at 1ms	79	A
		Pulse with t _p limited by T _{Jmax} at 100μs	199	
Power Dissipation	P _D	T _C =25°C	214	W
Thermal Resistance (Typ)	R _{θJC}	Junction-to-Case	0.7	°C/W
Junction Temperature	T _J		-55~ +175	°C
Storage Temperature	T _{STG}		-55~ +175	°C

Electrical characteristics (T_j=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 100μA	1200			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 1200V, V _{GS} = 0V			50	μA
Gate-Source leakage current	I _{GSS}	V _{GS} = 18V, V _{DS} = 0V			250	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 9.5mA		2.9		V
		V _{DS} = V _{GS} , I _D = 9.5mA, T _j = 175°C		2.0		
Drain-source on-resistance	R _{DS(on)}	V _{GS} = 18V, I _D = 40A		35	48	mΩ
		V _{GS} = 18V, I _D = 40A, T _j = 175°C		70		
Transconductance	g _{fs}	V _{DS} = 18V, I _D = 40A		25		S
		V _{DS} = 18V, I _D = 40A, T _j = 175°C		21		
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} = 1000V, V _{GS} = 0V, f = 1 MHz V _{AC} = 25mV		2820		pF
Output Capacitance	C _{oss}			108		
Reverse Transfer Capacitance	C _{rss}			6.6		
Internal Gate Resistance	R _{G(int)}	f = 1 MHz, V _{AC} = 25mV		1.0		Ω
Total Gate Charge	Q _g	V _{DS} = 800V, I _D = 40A V _{GS} = -4/18V		103		nC
Gate-Source Charge	Q _{gs}			22.6		
Gate-Drain Charge	Q _{gd}			31.2		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	V _{GS} = -4V, T _C = 25°C		53		A
Diode Forward voltage	V _{SD}	V _{GS} = -4V, I _{SD} = 20A		3.9		V
		V _{GS} = -4V, I _{SD} = 20A, T _J = 175°C		3.3		V
Diode pulse Current	I _{S, pulse}	V _{GS} = -4V, pulse width t _p limited by T _{jmax}		79		A

Typical Characteristics

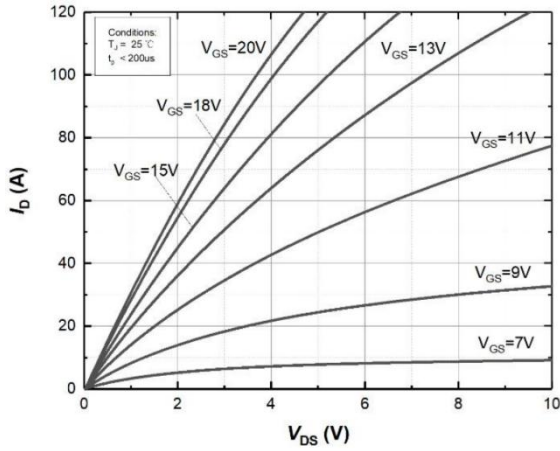


Figure 1. Output characteristics at $T_j=25^\circ\text{C}$

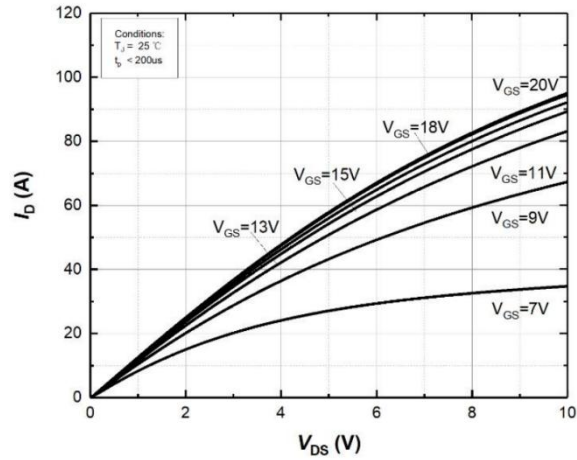


Figure 2. Output characteristics at $T_j=175^\circ\text{C}$

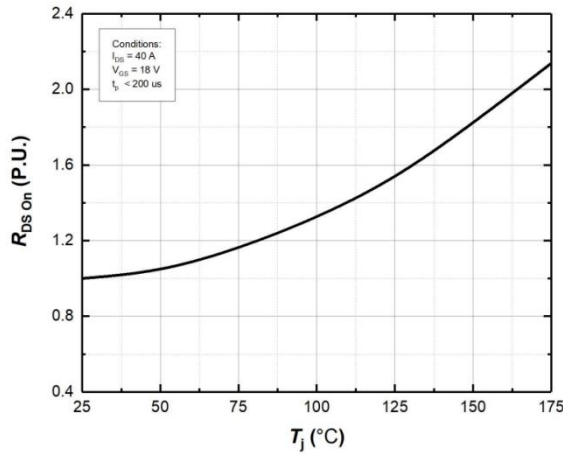


Figure 3. Normalized On-Resistance vs. Temperature

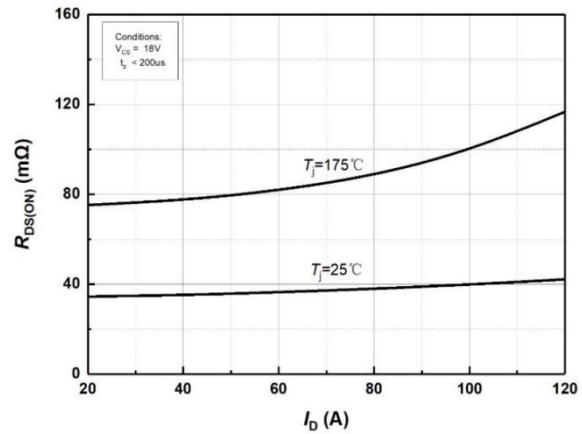


Figure 4. On-Resistance vs. Drain current for Various Temperature



Figure 5. On-Resistance vs. Temperature for Various Gate Voltage

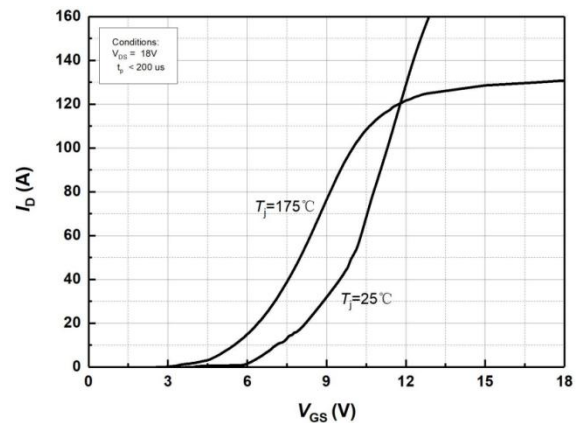


Figure 6. Transfer Characteristics for Various Junction Temperatures

Typical Characteristics

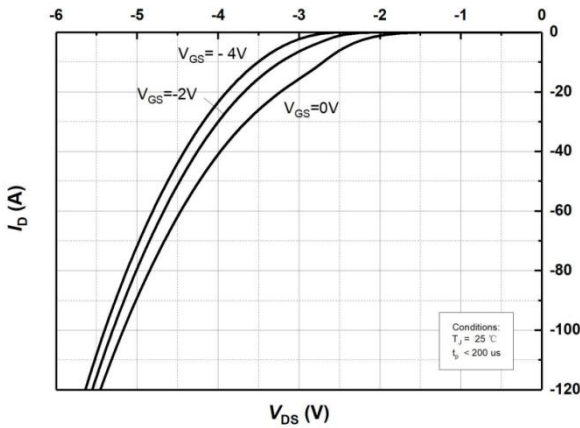


Figure 7. Body Diode Characteristics at $T_j=25^\circ\text{C}$

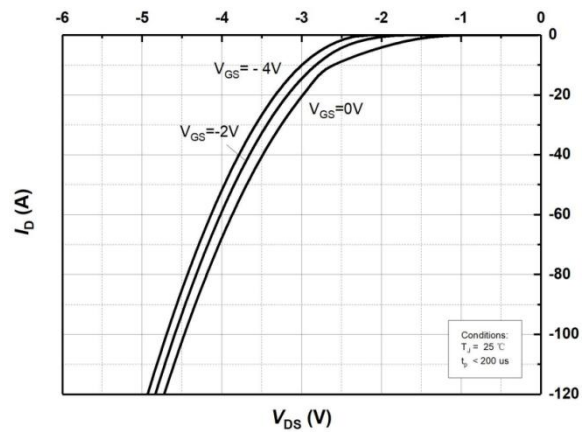


Figure 8. Body Diode Characteristics at $T_j=175^\circ\text{C}$

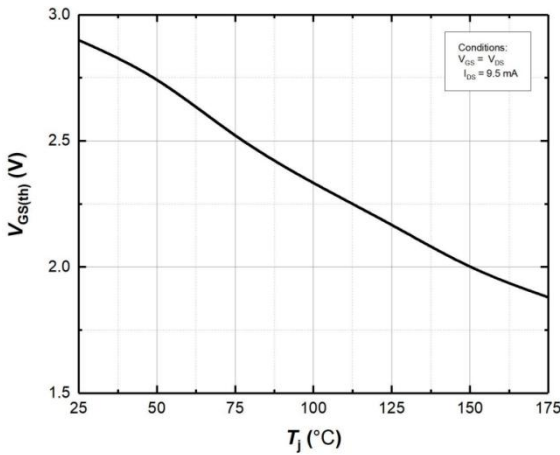


Figure 9. Threshold Voltage vs. Temperature

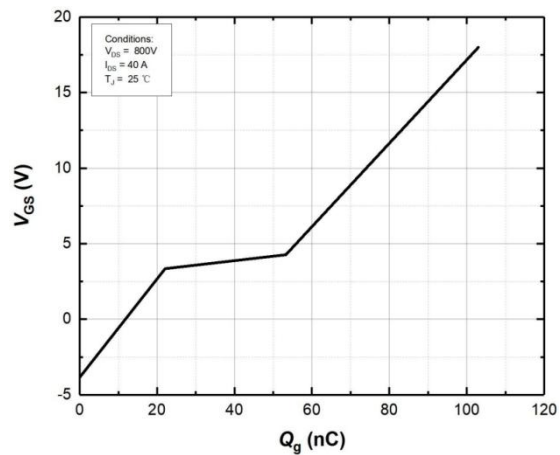


Figure 10 Gate Charge Characteristics

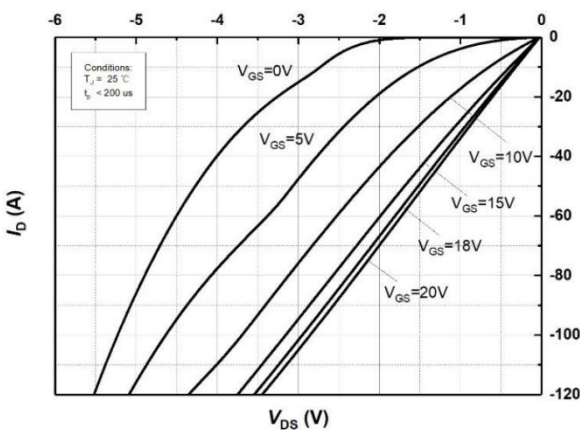


Figure 11. 3rd Quadrant Characteristic at $T_j=25^\circ\text{C}$

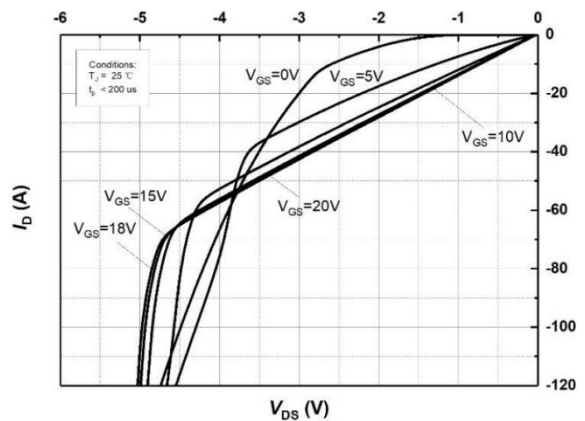


Figure 12. 3rd Quadrant Characteristic at $T_j=175^\circ\text{C}$

Typical Characteristics

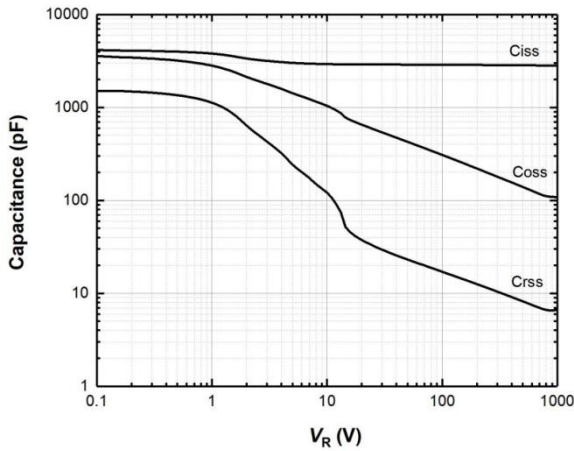


Figure 13. Capacitances vs. Drain-Source Voltage (0 - 1000V)

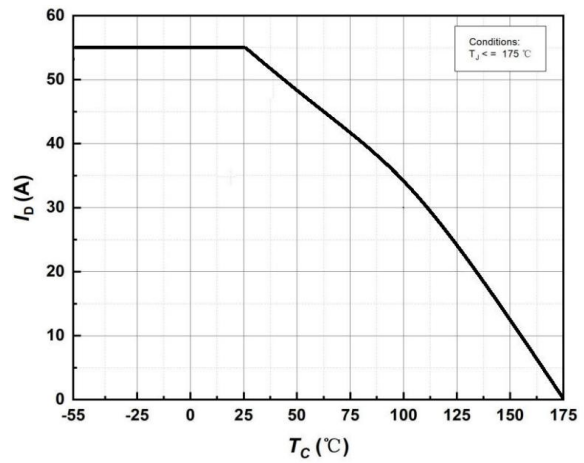


Figure 14. Continuous Drain Current Derating vs Case Temperature

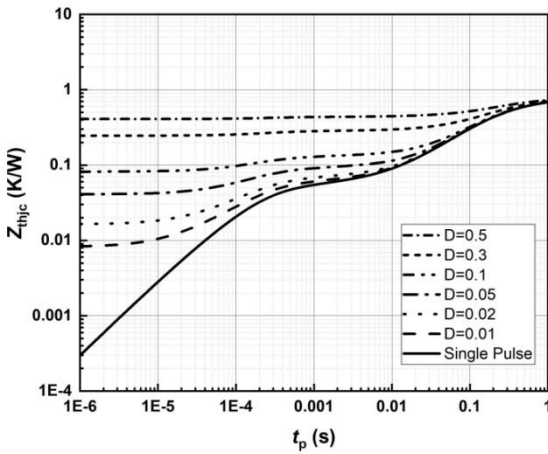


Figure 15. Transient Thermal Impedance (Junction - Case)

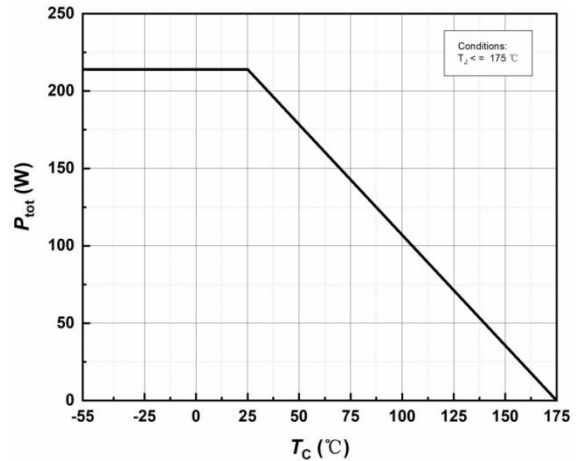


Figure 16. Maximum Power Dissipation Derating vs. Case Temperature

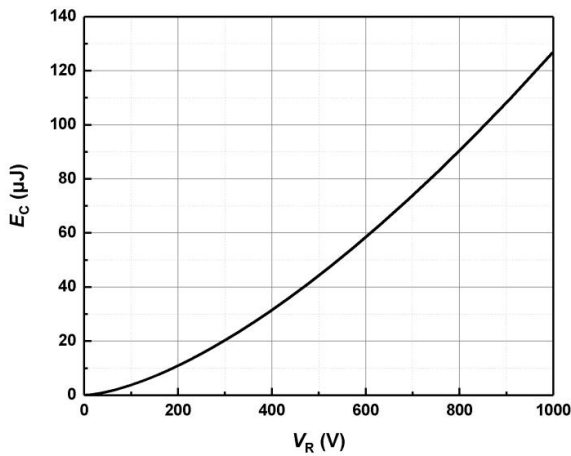


Figure 17. Output Capacitor Stored Energy

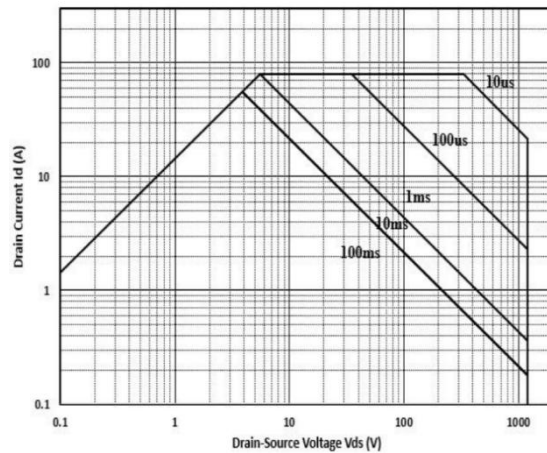
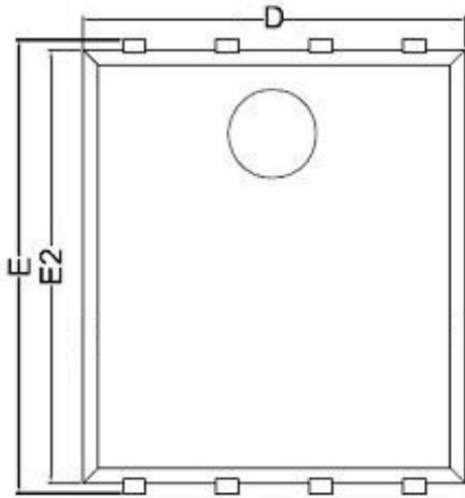
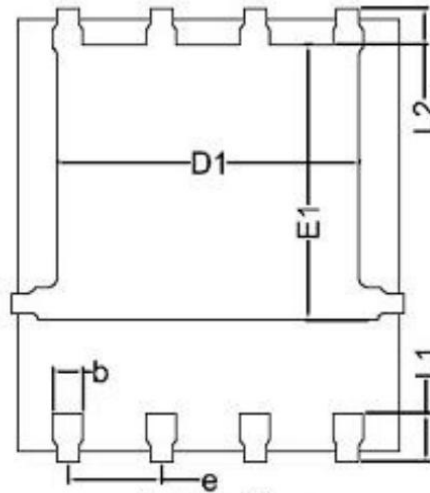


Figure 18. Safe Operating Area

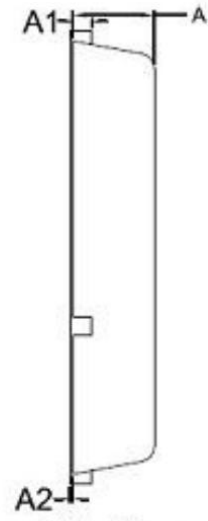
DFN5*6 Package Information



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.200	0.300	0.008	0.012
A2	0.000	0.050	0.000	0.002
D	4.800	5.000	0.189	0.197
E	5.900	6.100	0.232	0.240
D1	3.610	3.960	0.142	0.156
E1	3.380	3.780	0.133	0.149
E2	5.700	5.800	0.224	0.228
b	0.330	0.510	0.013	0.020
e	1.270 BSC.		0.050 BSC	
L1	0.510	0.710	0.020	0.028
L2	0.410	0.610	0.016	0.024