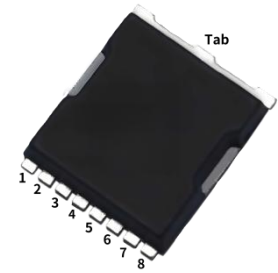
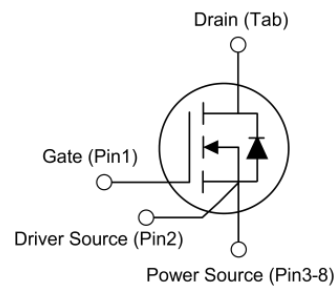


Silicon Carbide Power MOSFET

Parameter	Value	Unit
V_{DS}	750	V
I_D	62	A
$R_{DS(ON)}$	35	m Ω
Q_G	64	nC



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Features

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low $R_{DS(on)}$
- Low impedance package with driver source pin
- Easy to parallel and simple to drive

Applications

- Motor Drives
- Battery Chargers
- Photovoltaic-storage-charging
- High Voltage DC/DC Converters
- Switched-Mode Power Supply(SMPS)

Absolute Maximum Ratings (at $T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Drain-source Voltage	V_{DS}	$V_{GS}=0V$	750	V
Gate-source Voltage	V_{GS}	Absolute maximum values	-10/+22	V
	V_{GSop}	Recommended operational values	-4/+18	
Drain Current (continuous)	I_D	$V_{GS}=18V; T_C=25^\circ\text{C}$	62	A
		$V_{GS}=18V; T_C=100^\circ\text{C}$	44	
Drain Current (pulsed)	I_{DM}	$V_{GS}=18V; T_C=25^\circ\text{C}$	135	A
Power Dissipation	P_D	$T_C=25^\circ\text{C}; T_J=175^\circ\text{C}$	230	W
Avalanche energy, single pulse	E_{AS}	$T_C=25^\circ\text{C}; V_{DD}=100V; L=10mH$	270	mJ
Avalanche Current, single pulse	I_{AS}		75	A
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-	-55 to +175	$^\circ\text{C}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	-	0.65	$^\circ\text{C/W}$

Electrical Characteristics

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Static characteristics (at $T_C=25^\circ\text{C}$ unless otherwise specified)						
Drain-Source Breakdown Voltage	$B_{V_{DS}}$	$V_{GS}=0V; I_D=500\mu A$	750	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}; I_{DS}=23mA$	2.2	-	3.8	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=750V; V_{GS}=0V; T_J=25^\circ\text{C}$	-	-	10	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=18V; V_{DS}=0V$	-	-	250	nA
Static Drain-Source on Resistance	$R_{DS(on)}$	$V_{GS}=15V; I_D=27A; T_J=25^\circ\text{C}$	-	45	-	m Ω
		$V_{GS}=18V; I_D=27A; T_J=25^\circ\text{C}$	-	35	45	
		$V_{GS}=18V; I_D=27A; T_J=175^\circ\text{C}$	-	46	-	
Dynamic characteristics (at $T_C=25^\circ\text{C}$ unless otherwise specified)						
Input Capacitance	C_{iss}	$V_{DS}=500V; f=100KHz; V_{GS}=0V; T_J=25^\circ\text{C}$	-	1640	-	pF
Output Capacitance	C_{oss}		-	125	-	
Reverse Transfer Capacitance	C_{rss}		-	14	-	
Total Gate Charge	Q_G	$V_{DS}=500V; V_{GS}=-4/+18V; I_D=27A; T_J=25^\circ\text{C}$	-	64	-	nC
Gate-Source Charge	Q_{GS}		-	22	-	
Gate-Drain Charge	Q_{GD}		-	16	-	
Gate Resistor	R_G	$f=1MHz$	-	2.1	-	Ω
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=500V; V_{GS}=-4/+18V; I_D=27A; R_{g(ext)}=5\Omega$	-	9.6	-	ns
Rise Time	t_r		-	28	-	
Turn-off Delay Time	$t_{d(off)}$		-	31	-	
Fall Time	t_f		-	16	-	

Reverse SiC Diode Characteristics(at $T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Values			Units
			Min.	Typ.	Max.	
Diode Forward Voltage	V_{FSD}	$V_{GS}=0V; I_F=13.5A; T_J=25^\circ\text{C}$	-	2.9	-	V
Continuous Diode Forward Current	I_S	$V_{GS}=0V; T_J=25^\circ\text{C}$	-	62	-	A
Reverse Recovery Time	t_{RR}	$V_R=500V; V_{GS}=-4/+18V; I_F=27A; di/dt=2860A/\mu s; T_J=25^\circ\text{C}$	-	15	-	ns
Reverse Recovery Charge	Q_{RR}		-	248	-	nC
Peak Reverse Recovery Current	I_{RRM}		-	26	-	A

Typical Characteristics

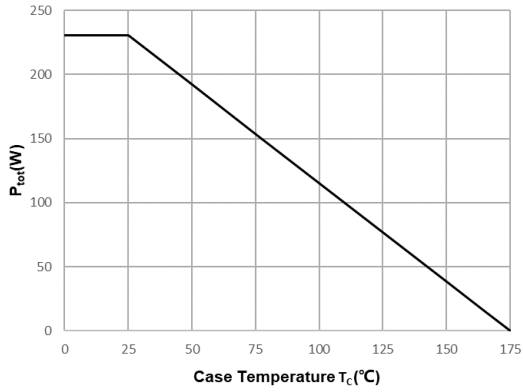


Fig1. Power Dissipation vs. Case Temperature

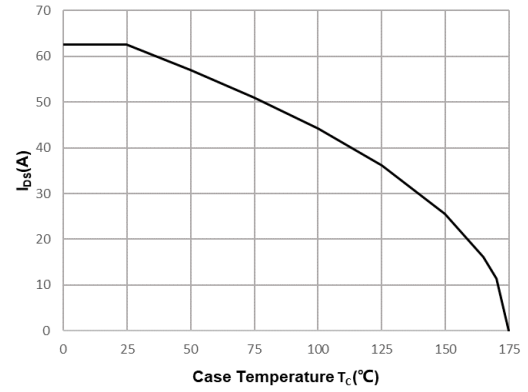


Fig2. Maximum DC Drain to Source Current vs. Case Temperature

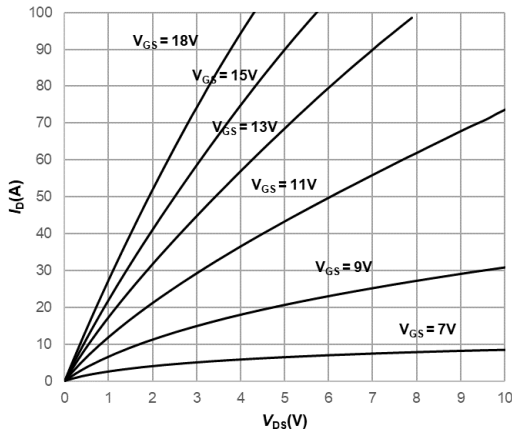


Fig3. Output Characteristics $T_j=25^\circ\text{C}$

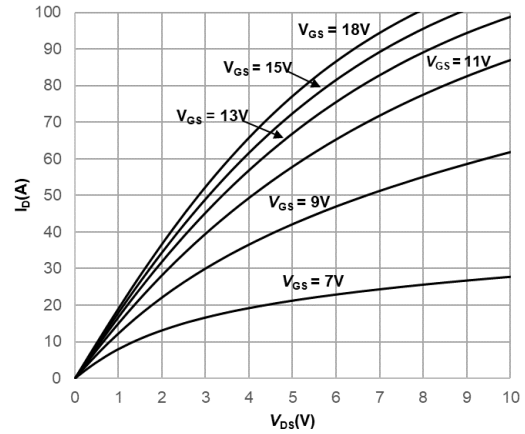


Fig4. Output Characteristics $T_j=175^\circ\text{C}$

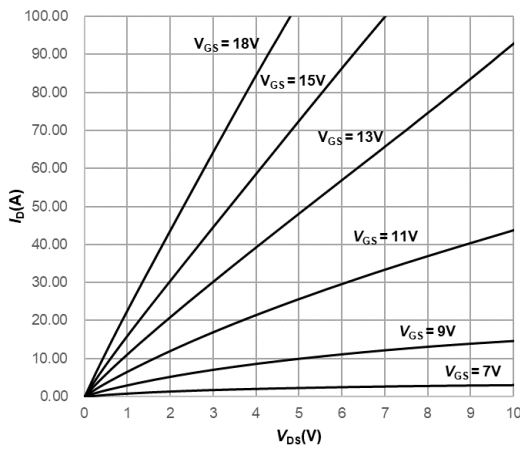


Fig5. Output Characteristics $T_j=-40^\circ\text{C}$

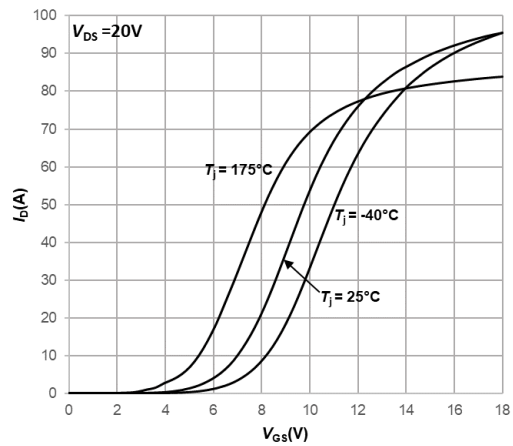


Fig6. Typical Transfer Characteristics

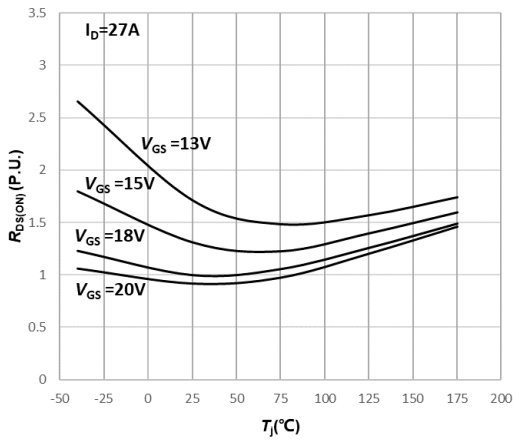


Fig7. Normalized On-Resistance vs. Temperature For Various V_{GS}

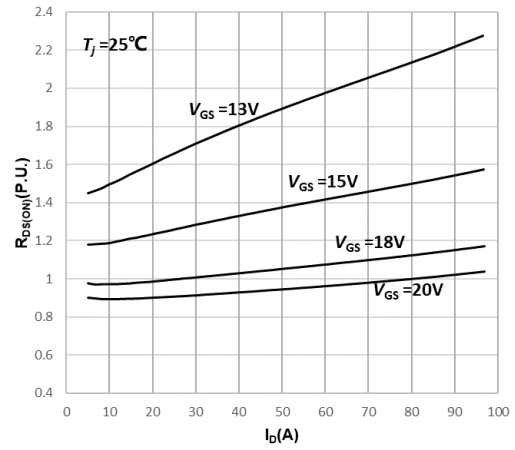


Fig8. Normalized On-Resistance vs. Drain Current For Various V_{GS}

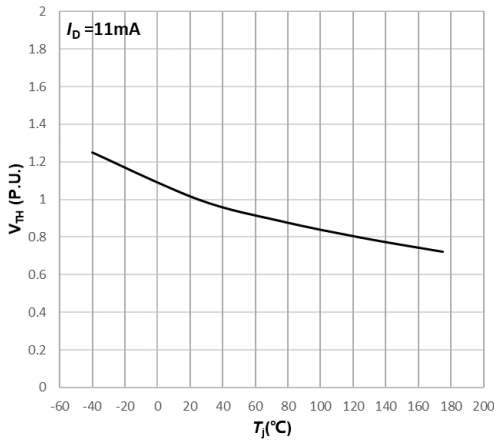


Fig9. Body Diode Characteristics

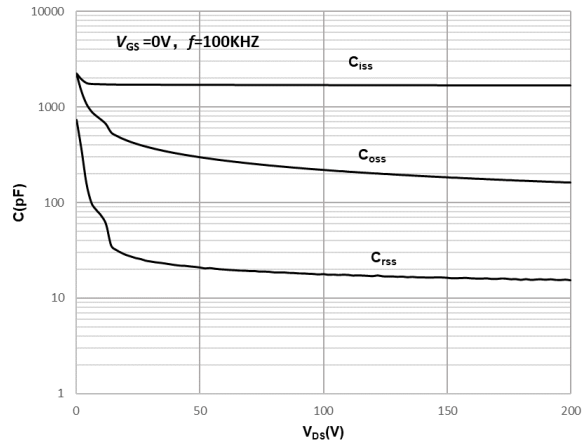


Fig10. Capacitances vs. Drain-Source Voltage (0-200V)

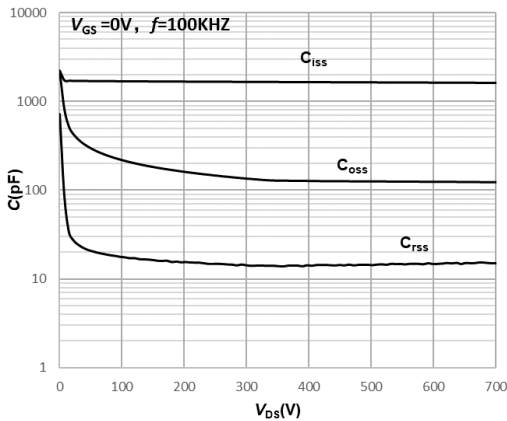


Fig11. Capacitances vs. Drain-Source Voltage (0-700V)

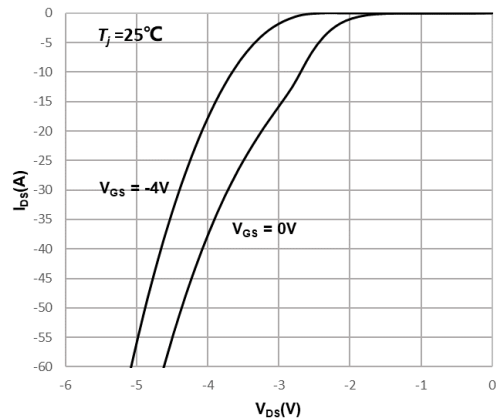


Fig12. Body Diode Characteristics

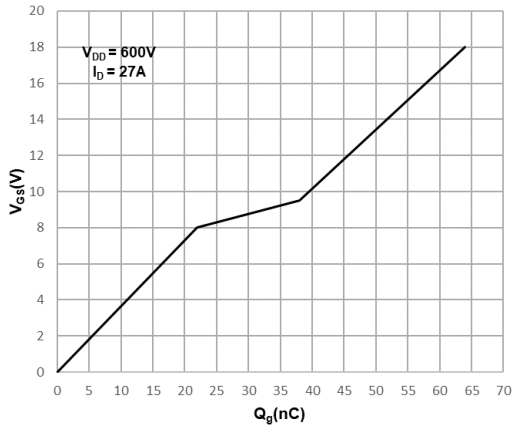
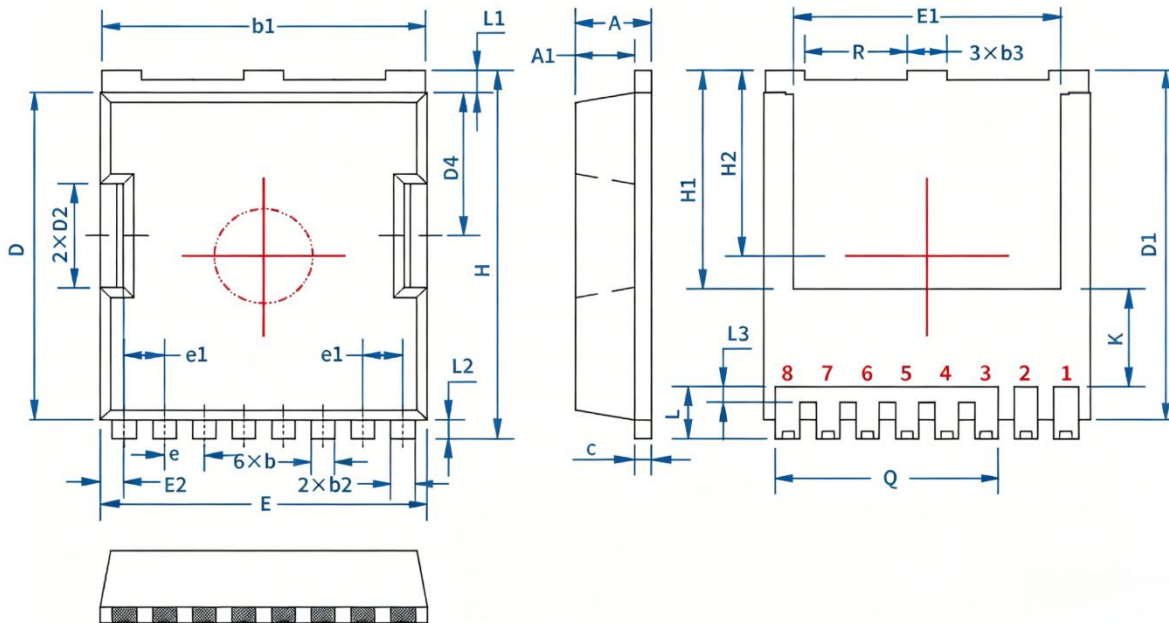


Fig13. Typical Gate Charge

Package Outlines(Unit:mm)

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Symbol	Millimeters			Symbol	Millimeters		
	Min.	Type.	Max.		Min.	Type.	Max.
A	2.25	2.30	2.35	E	9.85	9.90	9.95
A1	1.75	1.80	1.85	E1	8.00	8.10	8.20
b	0.65	0.70	0.75	E2	0.65	0.70	0.75
b1	9.75	9.80	9.90	H	11.60	11.70	11.80
b2	0.70	0.75	0.80	H1	6.95 BSC		
b3	1.15	1.20	1.25	H2	5.90 BSC		
C	0.45	0.50	0.55	K	3.10 REF		
D	10.35	10.40	10.45	L	1.55	1.65	1.75
D1	11.00	11.10	11.20	L1	0.65	0.70	0.75
D2	3.25	3.30	3.35	L2	0.50	0.60	0.70
D4	4.50	4.55	4.60	L3	0.40	0.50	0.60
e	1.20 BSC			Q	6.75 REF		
e1	1.225 BSC			R	3.00	3.10	3.20

Pin	Symbol	Description
1	G	Gate
2	KS	Driver Source
3-8	S	Power Source
Tab	D	Drain

Note:

1. All metal surfaces are Sn plated (matte), except area of cut.
2. Burr or mold flash size (0.5 mm) is not included in the dimensions.

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