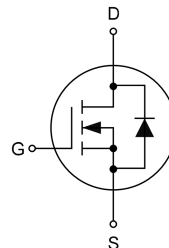


Silicon Carbide Power Mosfet

1. Product Information

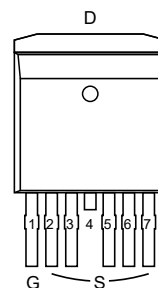
Features

- 750V, 11mΩ, 182A, N-Channel SiC MOS
- Low loss, fast switching speeds with low R_G
- Flexible gate voltage range ($V_{GS}=15V$ to $18V$)
- Robust body diode and low Q_{rr}



Applications

- EV charger
- Solar inverters
- Switch mode power supplies
- Motor drives
- UPS



Package Marking and Ordering Information

Product Name	Package	Marking	Packing	Quantity (pcs)
KJSC750R011D7	TO-263-7L	KJSC750R011D7	Tape & Reel	800

2. Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Values	Unit
V _{DS}	Drain-Source Voltage	750	V
I _D	Continuous Drain Current, T _C =25°C	182	A
	Continuous Drain Current, T _C =100°C	125	A
I _{DM}	Peak Drain Current, Pulse width t _p limited by T _{jmax}	546	A
V _{GS, max}	Gate-Source Voltage (Maximum)	-8/+22	V
V _{GS, OP}	Gate-Source Voltage (Recommended Operating)	-5/+18	V
P _D	Power Dissipation	750	W
E _{AS}	Single Pulsed Avalanche Energy V _{DS} =50 V, L=5 mH, R _G =25 Ω	2890	mJ
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 to 175	°C
R _{θJA}	Thermal Resistance, Junction to Ambient	46	°C/W
R _{θJC}	Thermal Resistance, Junction to Case	0.2	°C/W

3. Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Type	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _D =250 μA	750	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =750 V, V _{GS} =0 V	-	-	100	μA
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0 V, V _{GS} =-5 to 15 V,	-	-	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =30 mA	1.8	2.5	3.5	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =15 V, I _D =60 A	-	10	13	mΩ
		V _{GS} =15 V, I _D =60 A, T _J =175°C	-	20	-	mΩ
		V _{GS} =18 V, I _D =60 A	-	9.8	11	mΩ
		V _{GS} =18 V, I _D =60 A, T _J =175°C	-	20	-	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =100 V, V _{GS} =0 V, f=1 MHz	-	5550	-	pF
C _{oss}	Output Capacitance		-	710	-	pF
C _{rss}	Reverse Transfer Capacitance		-	50	-	pF
E _{oss}	Coss Stored Energy		-	300	-	μJ
R _G	Gate Resistance	f=1 MHz	-	1.3	-	Ω
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =400 V, I _D =60 A, V _{GS} =-5/+18 V	-	325	-	nC
Q _{gs}	Gate-Source Charge		-	108	-	nC
Q _{gd}	Gate-Drain Charge		-	84	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =400 V, I _D =60 A, V _{GS} =-5/+18 V, R _G =2.5 Ω, L=200 μH	-	62	-	ns
t _r	Turn-on Rise Time		-	8	-	ns
t _{d(off)}	Turn-off Delay Time		-	72	-	ns
t _f	Turn-off Fall Time		-	17	-	ns
E _{ON}	Turn-on Energy		-	925	-	mJ
E _{OFF}	Turn-off Fall Time Energy		-	1015	-	mJ
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =-5 V, I _S =24 A	-	4	-	V
T _{rr}	Reverse Recovery Time	V _R =400 V, I _F =560 A, di _F /dt=1000 A/μs	-	107	-	ns
I _{rrm}	Peak Reverse Recovery Current		-	45	-	A
Q _{rr}	Reverse Recovery Charge		-	1530	-	nC

4. Typical Characteristics

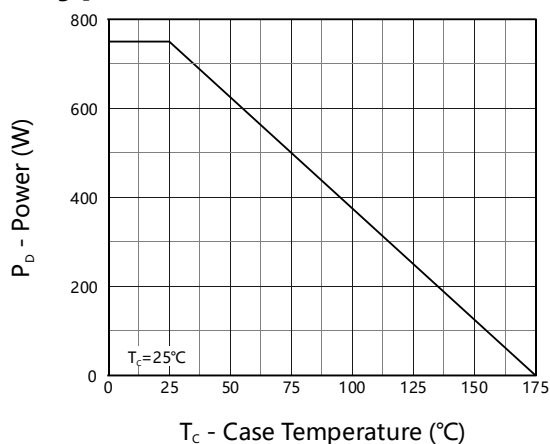


Fig 1. Power Capability

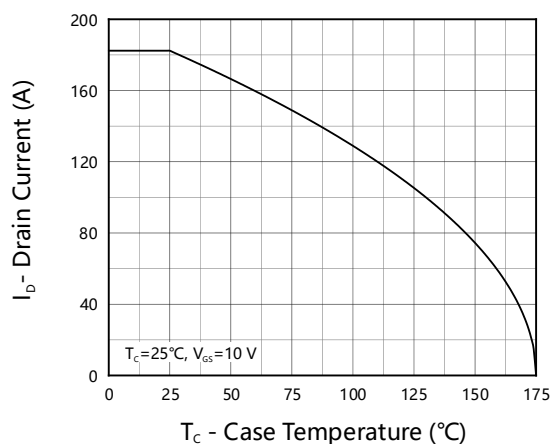


Fig 2. Current Capability

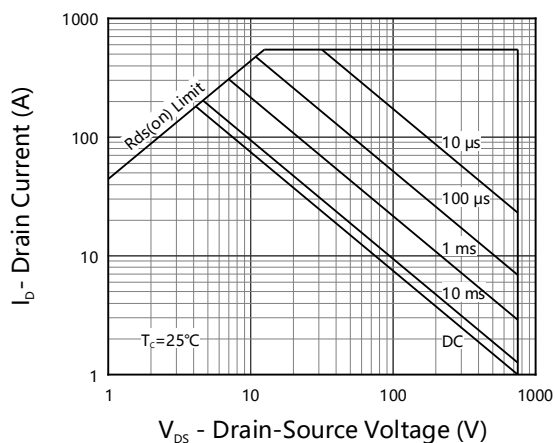


Fig 3. Safe Operation Area

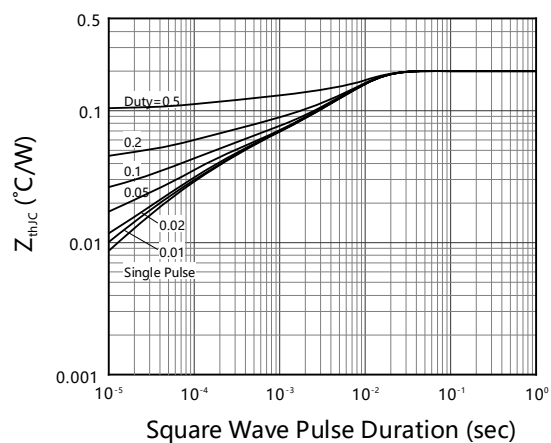


Fig 4. Transient Thermal Impedance

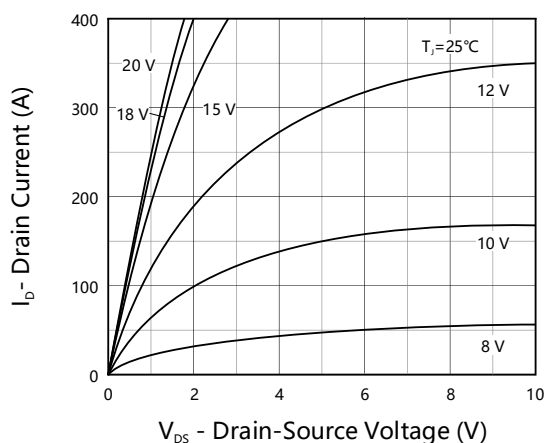


Fig 5. Output Characteristics, $T_J=25^{\circ}\text{C}$

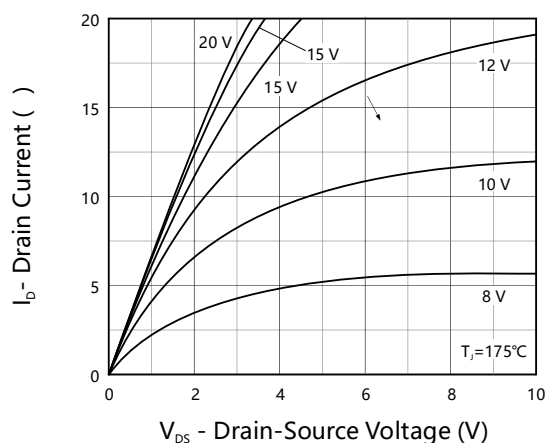


Fig 6. Output Characteristics, $T_J=175^{\circ}\text{C}$

4. Typical Characteristics(cont.)

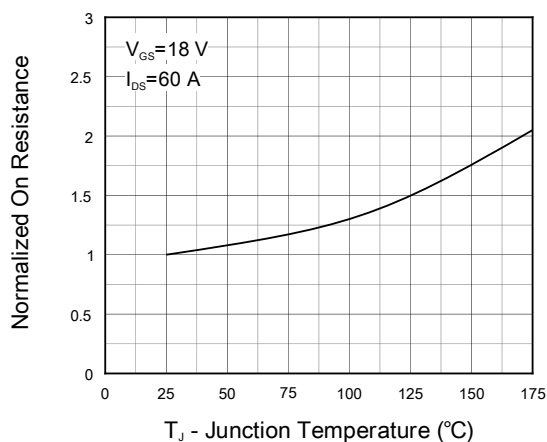


Fig 7. Normalized On Resistance

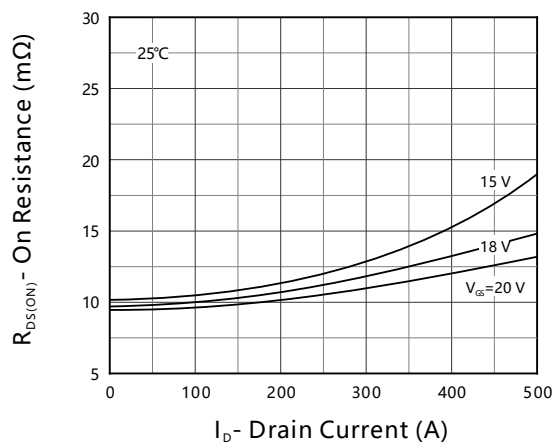


Fig 8. On Resistance vs. I_D

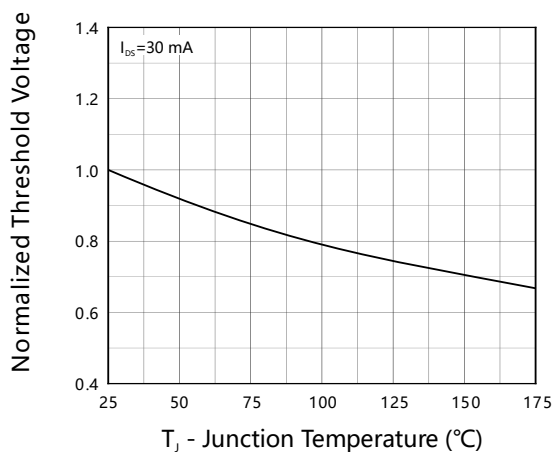


Fig 9. Normalized Threshold Voltage

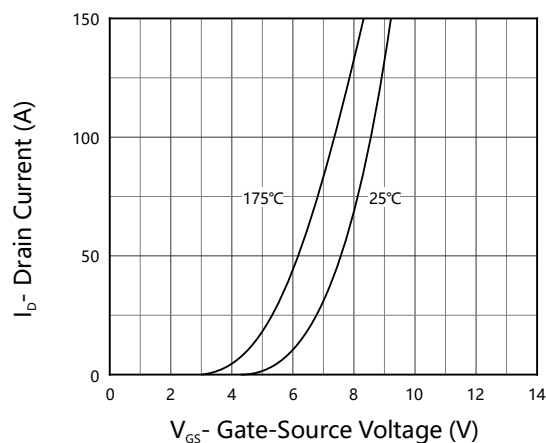


Fig 10. Diode Forward Current

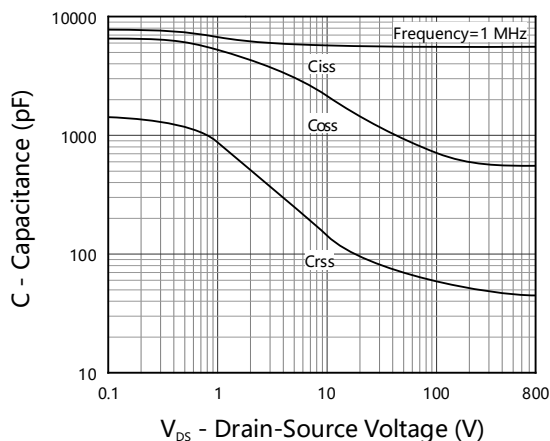


Fig 11. Capacitance

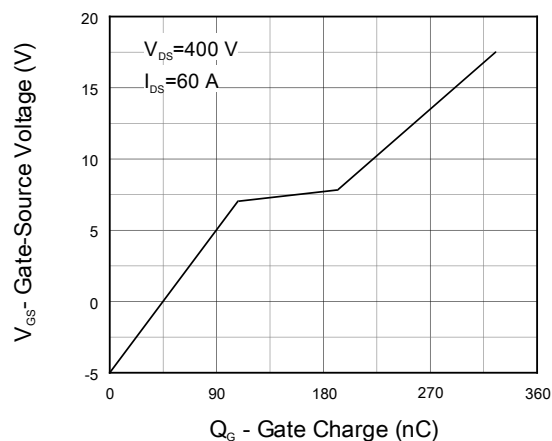
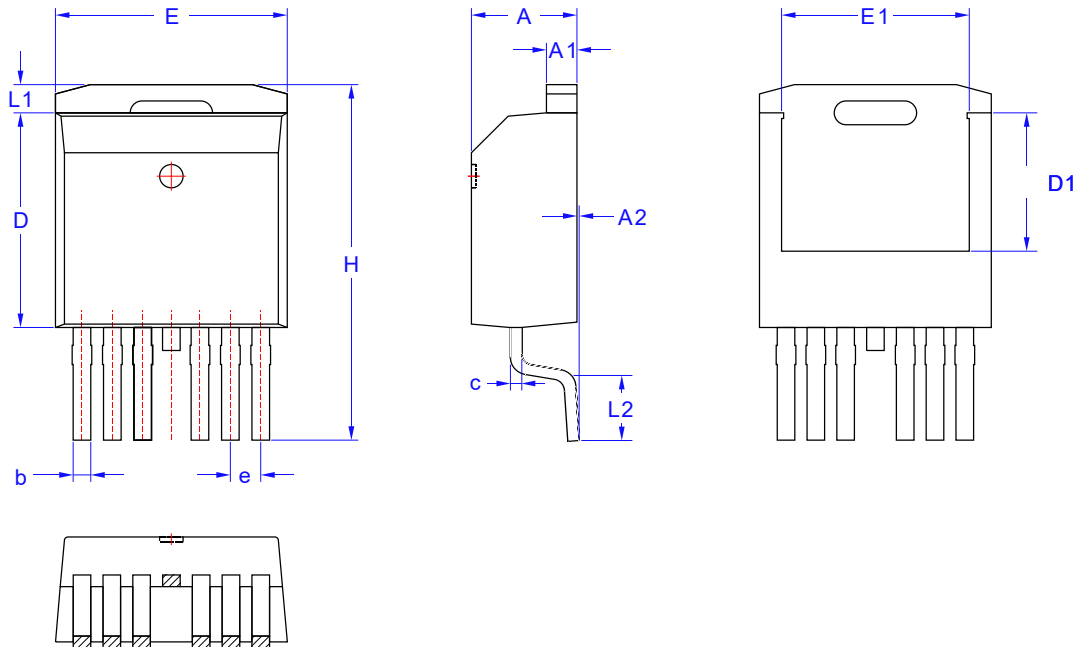


Fig 12. Gate Charge

5. Package Mechanical Data

TO-263-7L Package



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	4.30	4.43	4.56
A1	1.20	1.30	1.40
A2	0.00	0.075	0.15
b	0.50	0.61	0.72
c	0.45	0.51	0.62
D	8.90	9.08	9.28
D1	6.25	6.45	6.75
E	10.08	10.18	10.28
E1	8.20	8.30	8.40
e		1.27 BSC	
H	15.00	15.50	16.00
L1	0.85	1.00	1.15
L2	2.20	2.50	2.80