快捷芯
KUAIJIEXIN

KJSC750R011TB

Silicon Carbide Power Mosfet

1. Product Information

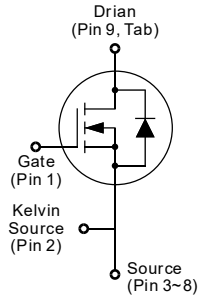
Features

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 Qrr



Applications

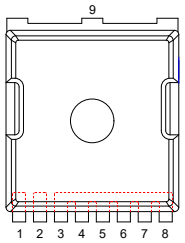
EV charger

Solar inverters

Switch mode power supplies

Motor drives

UPS



TOLL B-8L

Package Marking and Ordering Information

Product Name	Package	Marking	Packing	Quantity (pcs)
KJSC750R011TB	TOLL B-8L	KJSC750R011TB	Tape & Reel	2000

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

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage	750	V
I_D	Continuous Drain Current, T_C=25℃	182	A
	Continuous Drain Current, T_C=100℃	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	℃
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	46	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.2	℃/W

3. Electrical Characteristics (T_J=25℃, 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℃	-	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℃	-	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

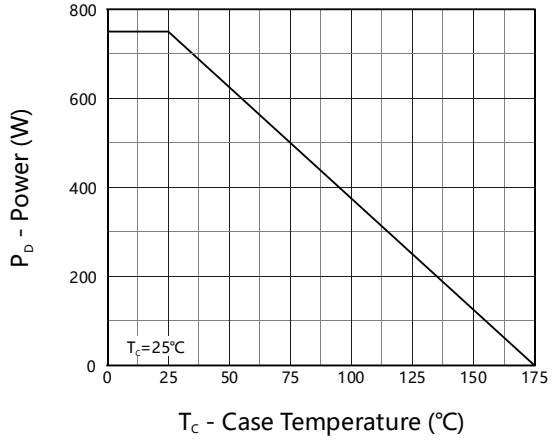


Fig 1. Power Capability

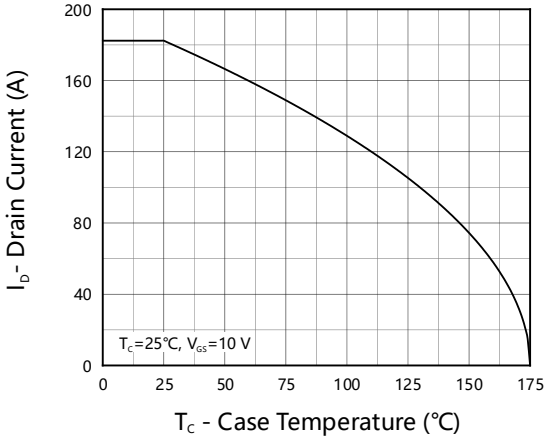


Fig 2. Current Capability

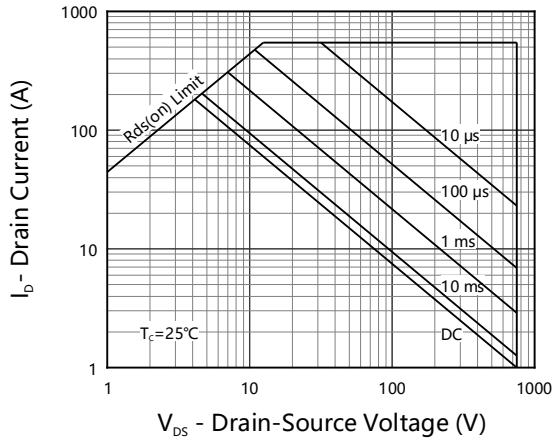


Fig 3. Safe Operation Area

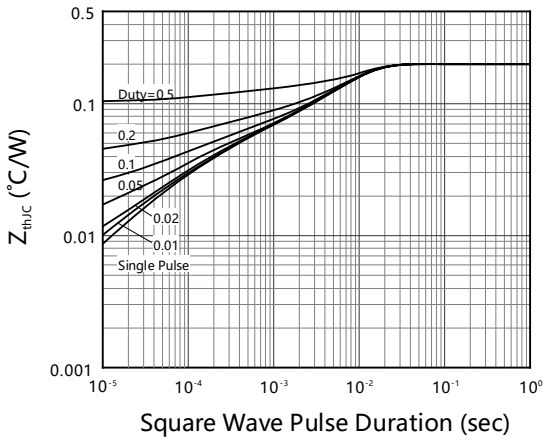


Fig 4. Transient Thermal Impedance

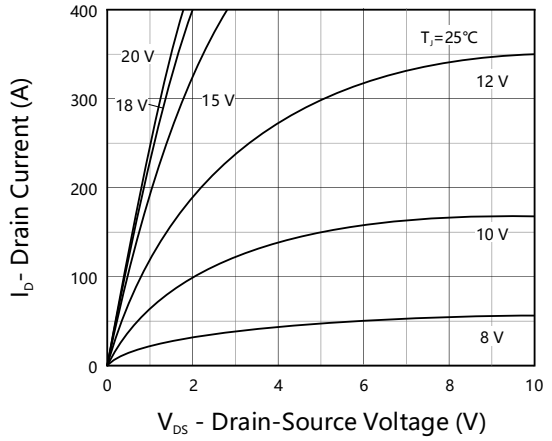


Fig 5. Output Characteristics, T_J=25℃

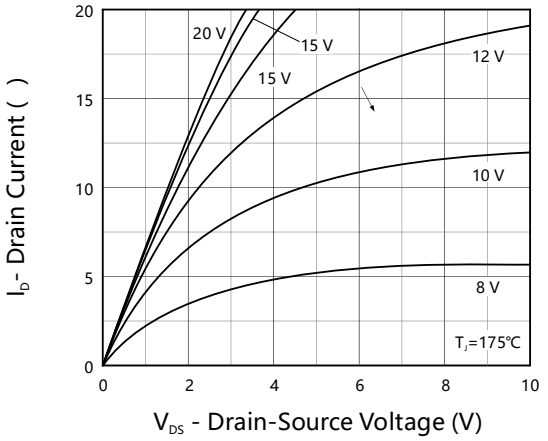


Fig 6. Output Characteristics, T_J=175℃

4. Typical Characteristics(cont.)

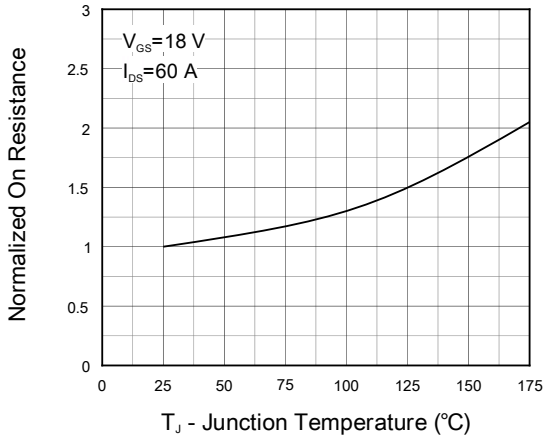


Fig 7. Normalized On Resistance

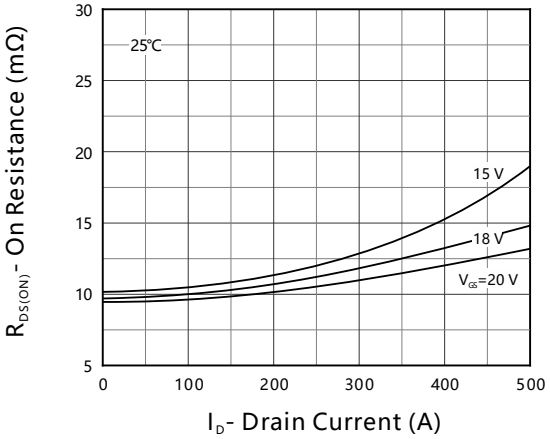


Fig 8. On Resistance vs. I_D

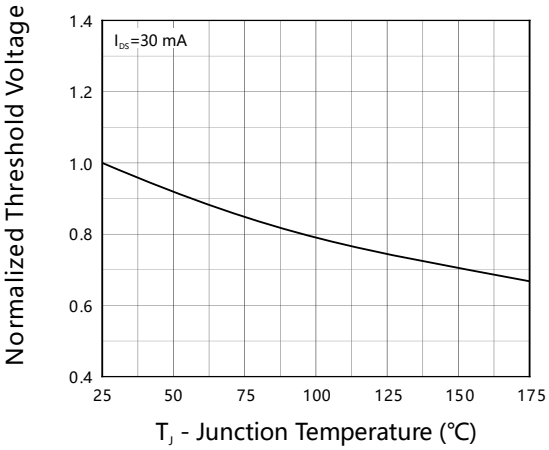


Fig 9. Normalized Threshold Voltage

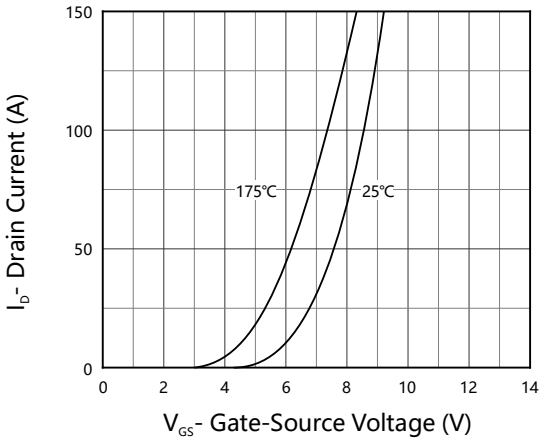


Fig 10. Diode Forward Current

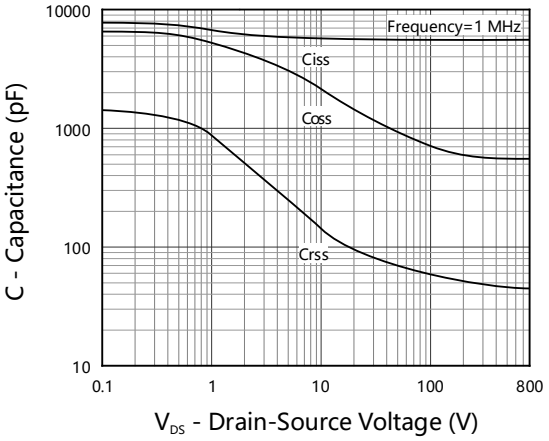


Fig 11. Capacitance

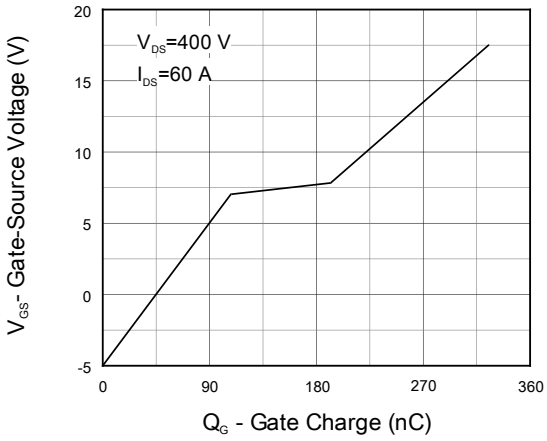
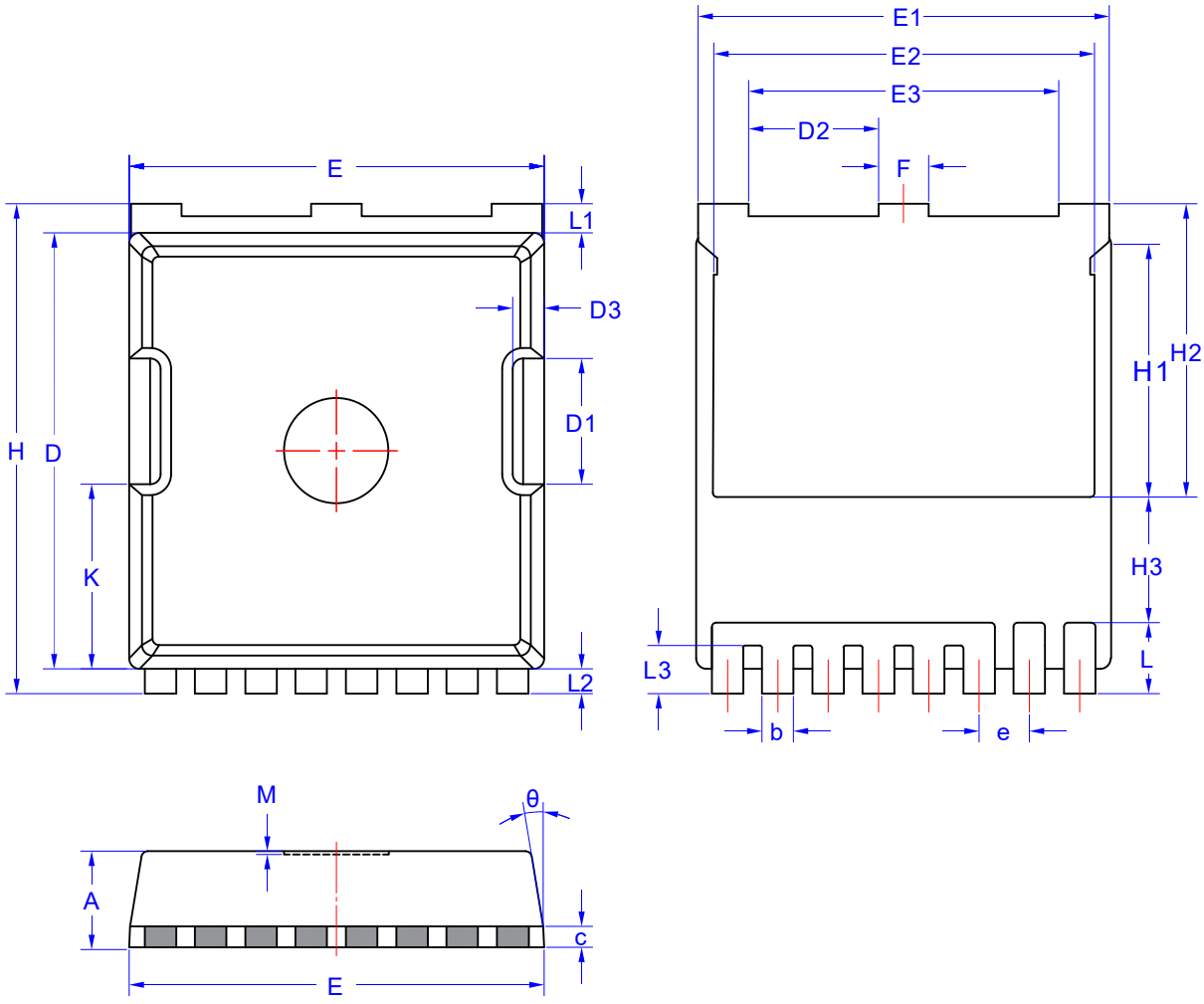


Fig 12. Gate Charge

5. Package Mechanical Data

TOLL B-8L Package



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
c		0.508 REF	
D	10.25	10.40	10.55
D1	2.85	3.00	3.15
D2	2.95	3.10	3.25
D3		0.75 REF	
E	9.75	9.90	10.05
E1	9.65	9.80	9.95
E2	8.95	9.10	9.25
E3	7.25	7.40	7.55
e		1.20 BSC	

Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
F	1.05	1.20	1.35
H	11.55	11.70	11.85
H1	6.03	6.18	6.33
H2	6.85	7.00	7.15
H3		3.00 BSC	
K	4.25	4.40	4.55
L	1.55	1.70	1.85
L1	0.55	0.70	0.85
L2	0.45	0.60	0.75
L3	1.00	1.15	1.30
M		0.08 REF	
θ	8°	10°	12°