KJCF60R033TB

Super-Junction Power Mosfet

1. Product Information

Features

- Ultra-fast body diode
- Good Reliability
- 100% UIS and isolation tested
- RoHs compliant

Applications

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)

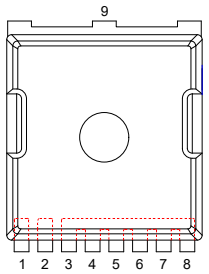
Quick reference

- V_{DS} = 600V
- I_D = 70A
- $R_{DS(ON)}$ ≦ 38mΩ @ V_{GS}=10V (Type: 33mΩ)

Pin Description

Pin	Description
1	Gate(G)
2	Kelvin Source(KS)
3~8	Source(S)
Tab	Drain(D)

Simplified Outline	Symbol



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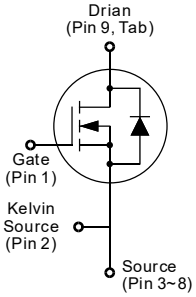

Package Marking and Ordering Information

Part number	Marking	Package	Packaging	Quantity	Reel size	Tape width
KJCF60R033TB	KJCF60R033TB	TOLL-B-8L	☑ Tape & Reel	2000 PCS	13"	24 mm
			☐ Tube	N/A	N/A	N/A

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

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Current, T_A=25℃, V_{GS}@10V [1]	70	A
	Continuous Drain Current, T_A=100℃, V_{GS}@10V [1]	50	A
I_{DM}	Pulsed Drain Current [1,2]	280	A
E_{AS}	Single Pulse Avalanche Energy [3]	1200	mJ
P_D	Power Dissipation	429	W
dv/dt	Reverse diode dv/dt	50	V/ns
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient, Steady-State [4]	48	℃/ W
$R_{\theta JC}$	Thermal Resistance from Junction to Case, Steady-State [4]	0.35	℃/ W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55~175	℃

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	600	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=600V, V_{GS}=0V, T_J=125℃	-	-	5	μA
I_{GSS}	Gate-body Leakage current	V_{DS}=0V, V_{GS}=±30V	-	-	±100	nA
$V_{GS(th)}$	Gate-Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	3.0	3.6	4.2	V
$R_{DS(on)}$	Drain-Source on-Resistance	V_{GS}=10V, I_D=25A	-	33	38	mΩ
Dynamic characteristics						
C_{iss}	Input Capacitance	V_{DS}=100V, V_{GS}=0V, f=100KHz	-	5125	-	pF
C_{oss}	Output Capacitance		-	220	-	
C_{rss}	Reverse Transfer Capacitance		-	10	-	
Switching characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=480V, I_D=25A, R_G=27Ω, V_{GS}=10V	-	170	-	ns
t_r	Turn-on Rise Time		-	117	-	
$t_{d(off)}$	Turn-off Delay Time		-	598	-	
t_f	Turn-off Fall Time		-	133	-	
Q_g	Total Gate Charge	V_{DS}=480V, I_D=25A, V_{GS}=10V	-	203	-	nC
Q_{gs}	Gate-Source Charge		-	48	-	
Q_{gd}	Gate-Drain Charge		-	127	-	
Source-Drain Diode characteristics						
V_{SD}	Diode Forward Voltage	I_S=25A, V_{GS}=0V	-	0.9	1.2	V
Q_{rr}	Reverse Recovery Charge	V_R=400V, IF=25A, di_F/dt=100A/us	-	1.5	-	μC
t_{rr}	Reverse Recovery Time		-	188	-	ns

Notes:

1. The max drain current rating limited by package and maximum junction temperature.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. E_{AS} Condition: T_J=25℃, V_{DD}=100V, R_G=25Ω, L=30mH, I_{AS}=10A.
4. Mount on minimum PCB layout.

4. Electrical Characteristics

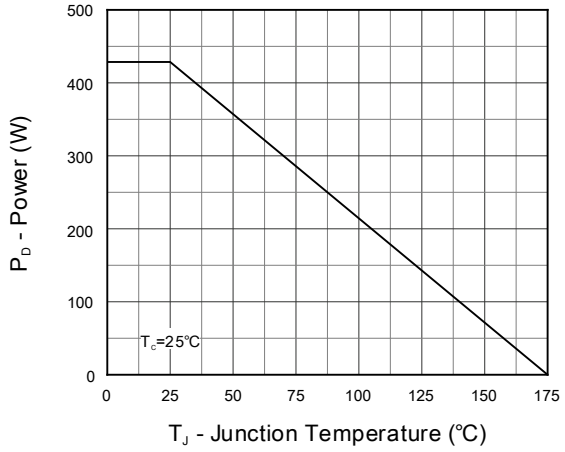

Fig 1. Power Capability

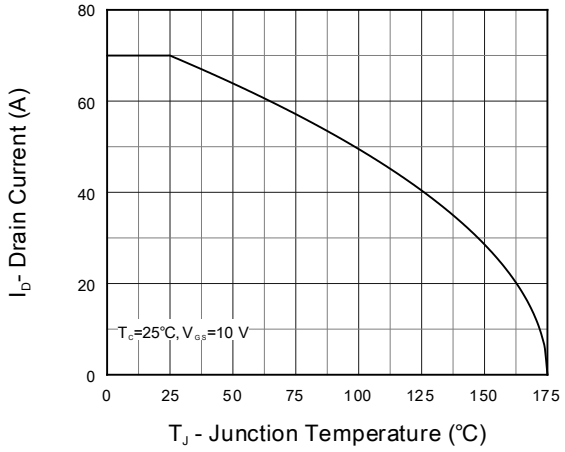

Fig 2. Current Capability

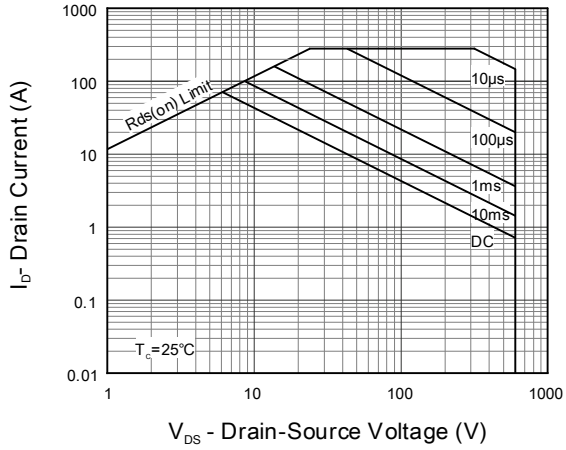

Fig 3. Safe Operation Area

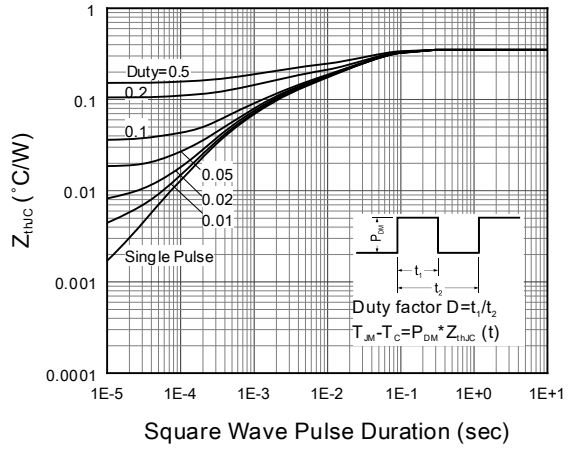

Fig 4. Transient Thermal Impedance

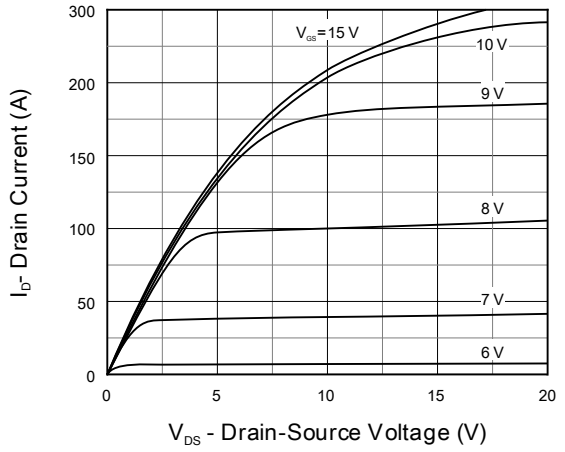

Fig 5. Output Characteristics
T_J=25℃

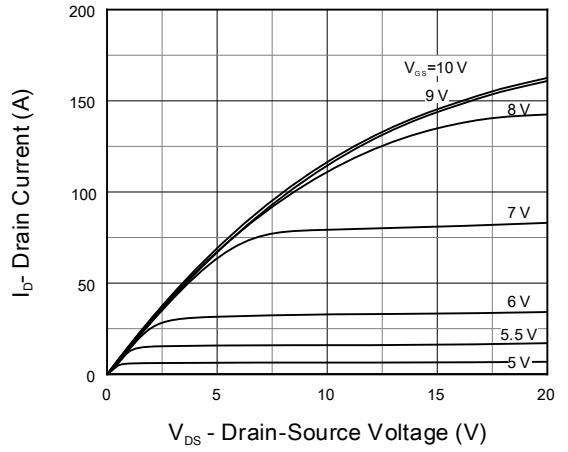

Fig 6. Output Characteristics
T_J=150℃

4. Electrical Characteristics (cont.)

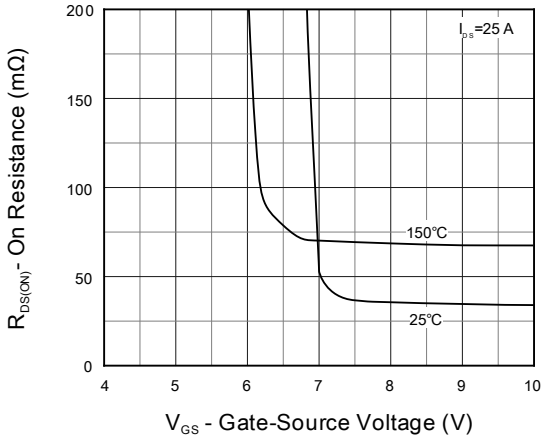

Fig 7. Transfer Characteristics

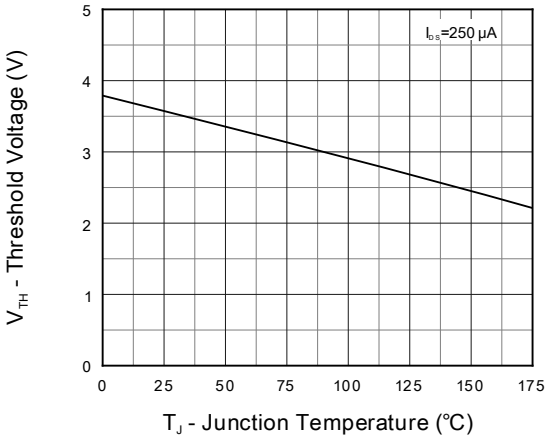

Fig 8. Normalized Threshold Voltage

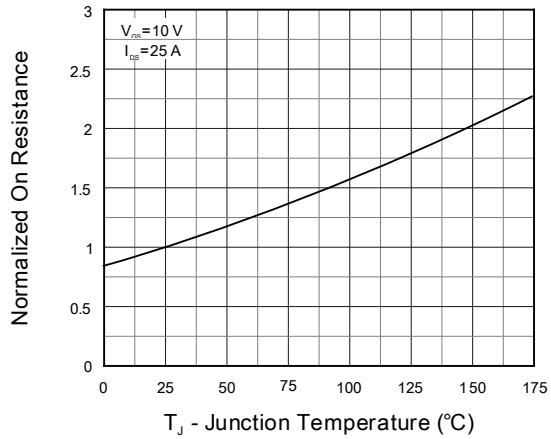

Fig 9. Normalized On Resistance

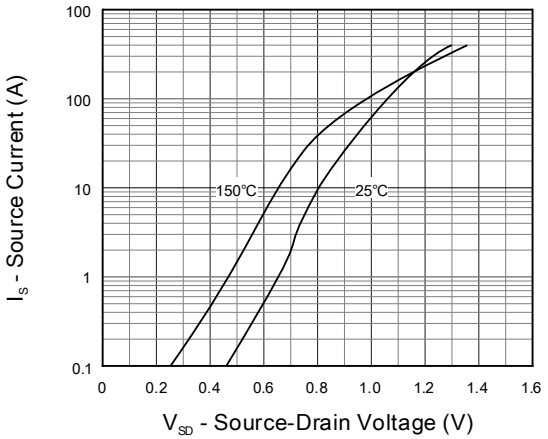

Fig 10. Diode Forward Current

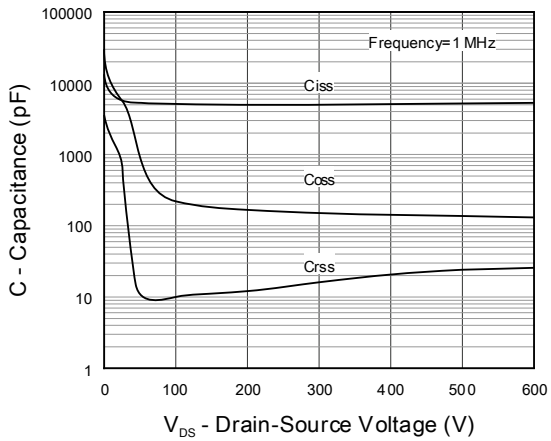

Fig 11. Capacitance

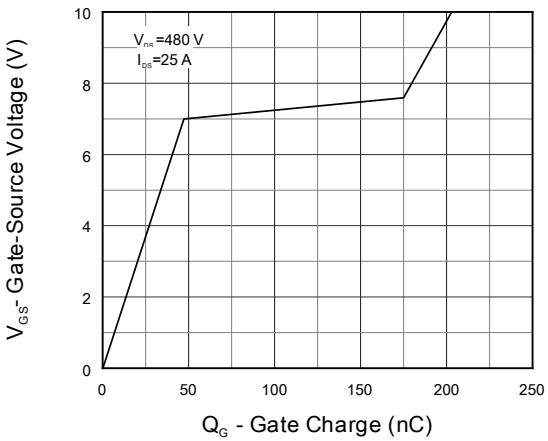

Fig 12. Gate Charge

5. Package Mechanical Data

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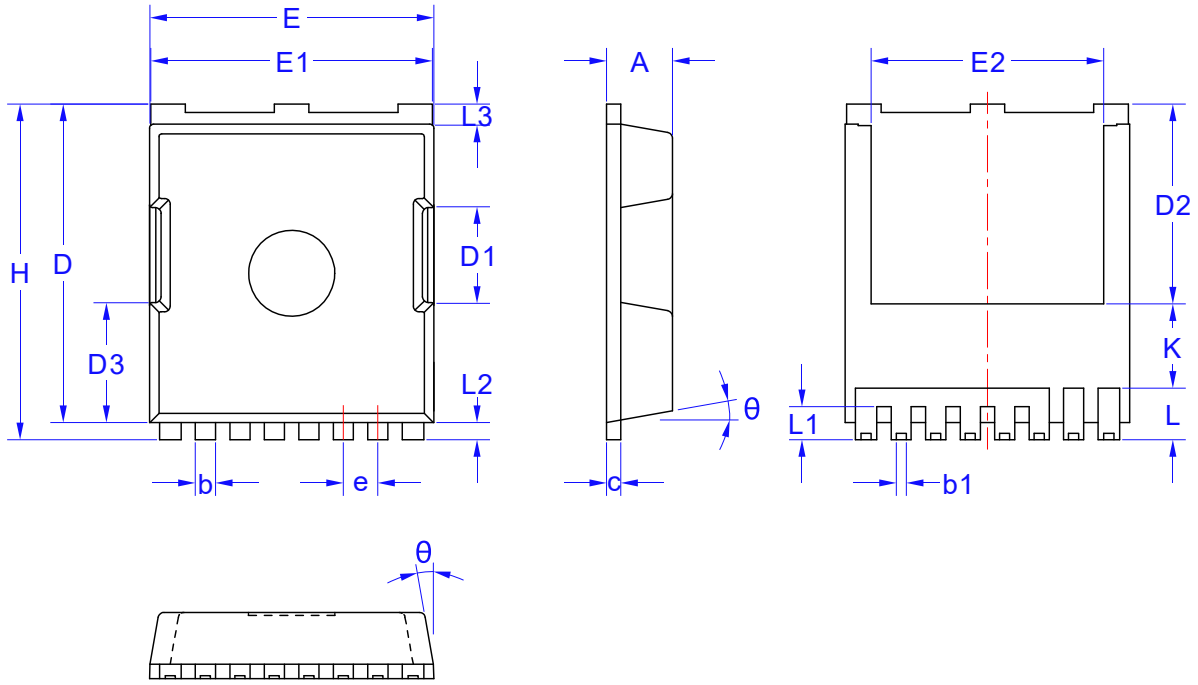

Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	2.20	2.30	2.40
b	0.60	0.70	0.90
b1	0.30		0.50
c	0.40	0.50	0.60
D	10.28	10.38	10.48
D1	3.20	3.30	3.40
D2	6.85	6.95	7.05
D3		4.18 REF	
E	9.80	9.90	10.0
E1	9.70	9.80	9.90

Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
E2	8.00	8.10	8.20
e		1.20 BSC	
H	11.48	11.68	11.88
L	1.60	1.80	2.10
L1	1.00	1.15	1.30
L2		0.60 TYPE	
L3		0.60 TYPE	
K		2.90 TYPE	
θ	8°	10°	12°