

P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

Advanced Technology
Fast Switching
Low Gate Charge and $R_{DS(ON)}$

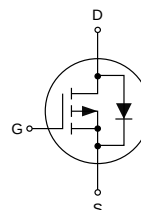
1.2 Applications

Battery protection
Hard switched and high frequency circuits
Power management

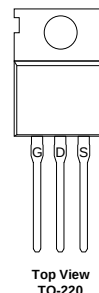
1.3 Quick reference

$V_{DS} = -80\text{ V}$
 $I_D = -100\text{ A}$
 $R_{DS(ON)} \leq 15\text{ m}\Omega @ V_{GS} = 10\text{ V}$

Schematic Diagram



Pin Assignment



2. Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Quantity (pcs)
KJ100P08C	TO-220	KJ100P08C	N/A	1000

3. Absolute Maximum Ratings ($T_c=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage	-80	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current @ $T_c=25^\circ\text{C}$	-100	A
	Continuous Drain Current @ $T_c=100^\circ\text{C}$	-76	A
I_{DM}	Pulsed Drain Current ^[1]	-300	A
E_{AS}	Single Pulse Avalanche Energy ^[2]	1200	mJ
P_D	Power Dissipation @ $T_c=25^\circ\text{C}$	151	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55~150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient ^[1]	61.5	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance from Junction to Case ^[1]	0.83	$^\circ\text{C/W}$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _D =-250 μA	-80	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-64 V, V _{GS} =0 V	-	-	-1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{DS} =0 V, V _{GS} =±20 V	-	-	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250 μA	-1.2	-2.0	-2.5	V
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-10 V, I _D =-20 A	-	12	15	mΩ
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-4.5 V, I _D =-15 A	-	15	20	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =-40 V, f=1.0 MHz	-	12020	-	pF
C _{oss}	Output Capacitance		-	958	-	
C _{rss}	Reverse Transfer Capacitance		-	782	-	
R _g	Gate resistance	V _{GS} =0 V, V _{DS} Open	-	4	-	Ω
t _{d(on)}	Turn-on Delay Time	V _{DD} =-40 V, I _D =-20 A, R _G =6 Ω, R _L =2 Ω, V _{GS} =-10 V	-	70	-	ns
t _r	Turn-on Rise Time		-	210	-	
t _{d(off)}	Turn-off Delay Time		-	405	-	
t _f	Turn-off Fall Time		-	411	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DD} =-40 V, I _D =-20 A, V _{GS} =-10 V	-	170	-	nC
Q _{gs}	Gate-Source Charge		-	48	-	
Q _{gd}	Gate-Drain Charge		-	76	-	
Diode Characteristics						
I _S	Diode Forward Current	T _C =25°C	-	-	-40	A
I _{SM}	Pulse Diode Forward Current		-	-	-120	A
V _{SD}	Body Diode Voltage	I _{SD} =-1 A, V _{GS} =0 V	-	-	-1.2	V
T _{rr}	Reverse Recovery Time	I _F =-20A, V _{GS} =-30 V, dI _F /dt=100 A/μs	-	38	-	ns
Q _{rr}	Reverse Recovery Charge		-	36	-	nC

Notes:

1. Repetitive rating; pulse width limited by maximum junction temperature
2. V_{DD}=-64 V, L=0.3 mH, R_G=25 Ω, Starting T_J=25°C

5. Typical Characteristics

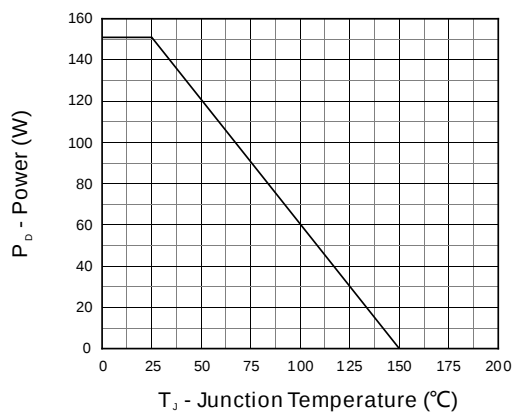


Fig 1. Power Dissipation

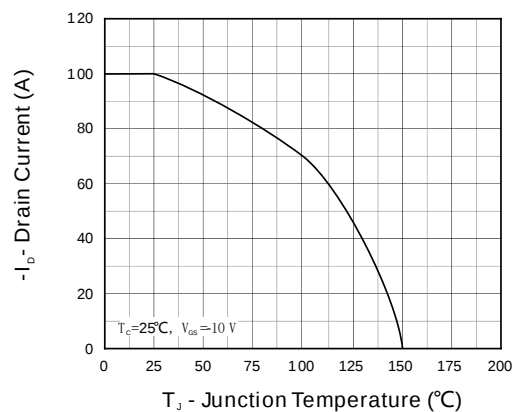


Fig 2. Current Capability

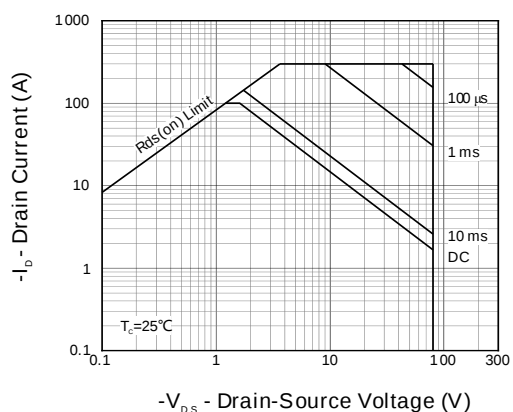


Fig 3. Safe Operation Area

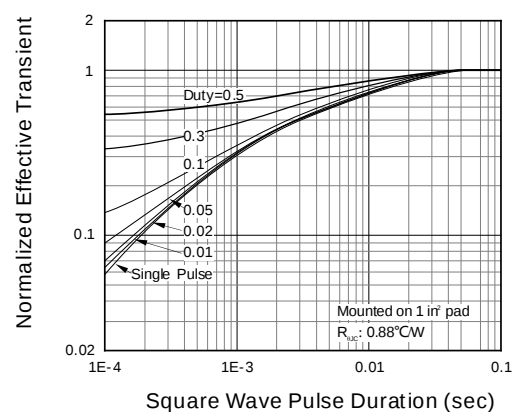


Fig 4. Transient Thermal Impedance

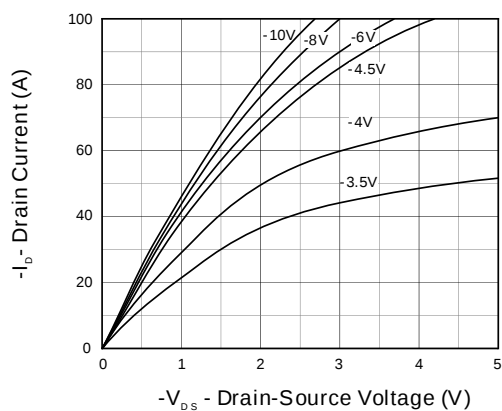


Fig 5. Output Characteristics

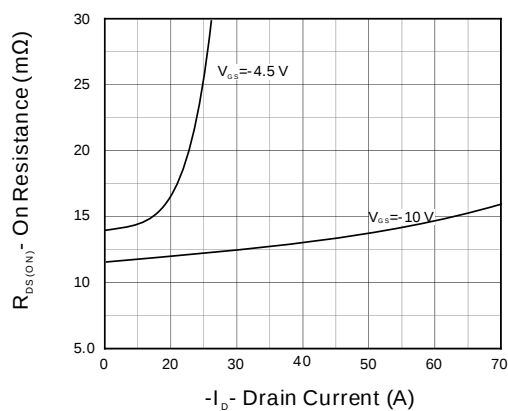


Fig 6. On Resistance

5. Typical Characteristics (Cont.)

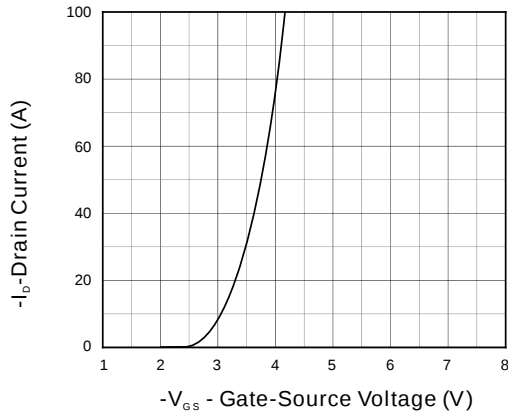


Fig 7. Transfer Characteristics

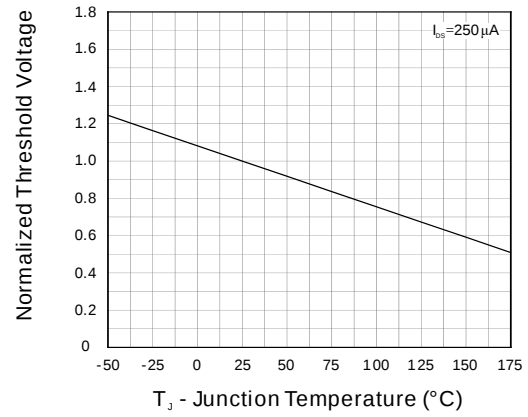


Fig 8. Normalized Threshold Voltage

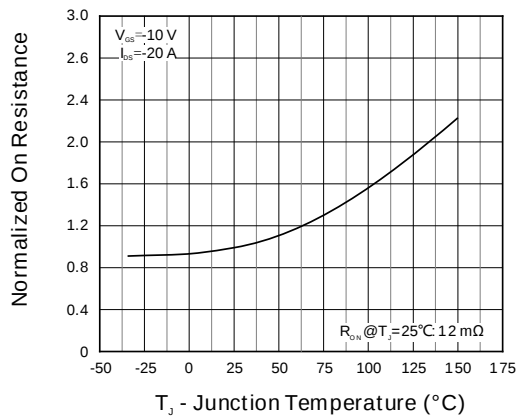


Fig 9. Normalized On Resistance

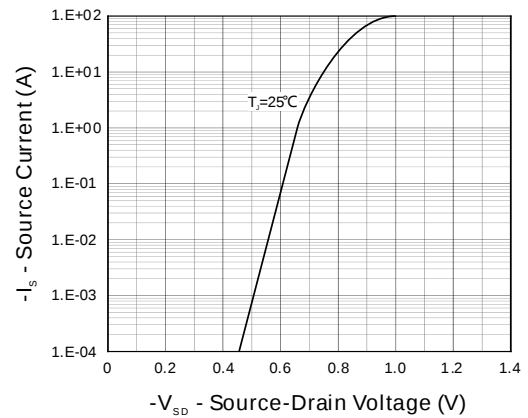


Fig 10. Diode Forward Current

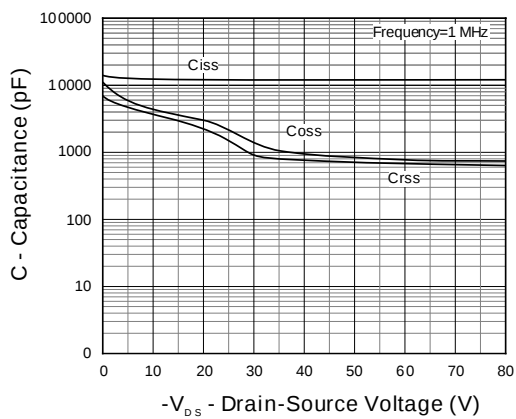


Fig 11. Capacitance

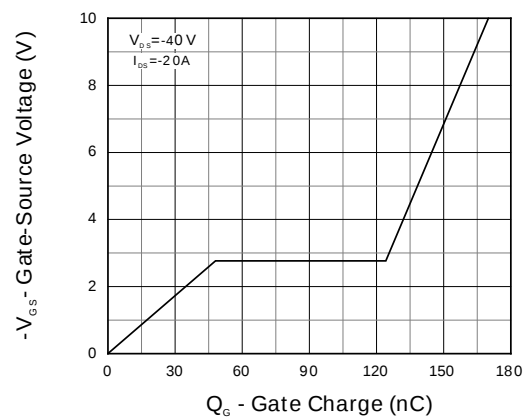
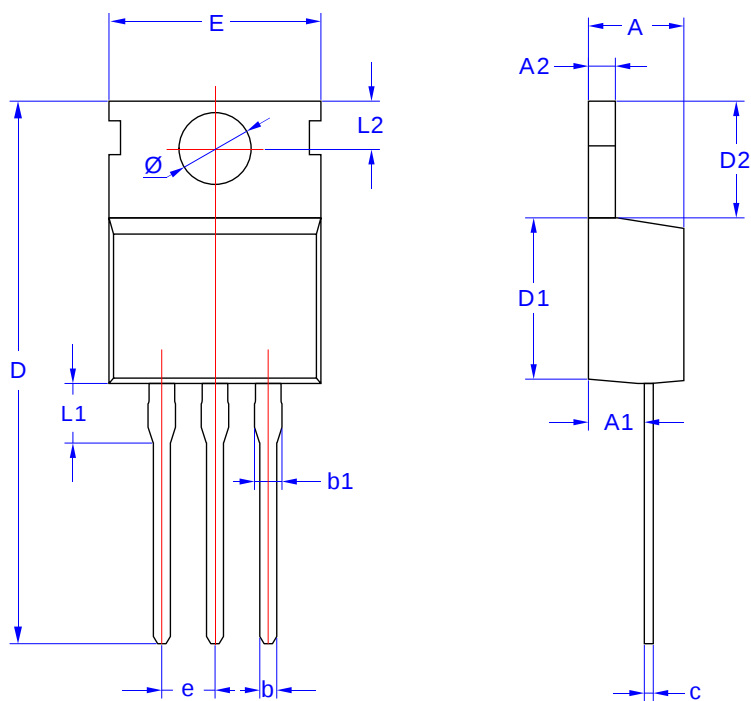


Fig 12. Gate Charge

6. Package Mechanical Data

TO-220 Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	4.24	4.70
A1	2.20	3.00
A2	1.15	1.40
b	0.70	0.95
b1	1.14	1.70
c	0.40	0.60
D	28.0	29.8
D1	8.80	9.90
D2	6.25	6.90
E	9.70	10.50
L1	3.80	
L2	2.40	3.00
e	2.54 BSC	
Φ	3.60	