

P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- Surface-mounted package
- Low gate charge

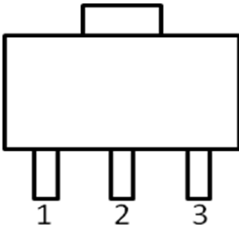
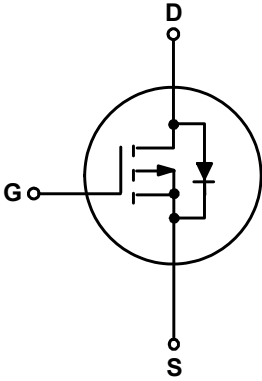
1.2 Applications

- Motor driver appliances
- High power inverter system
- Adapter appliances

1.3 Quick reference

- $BV \leq -60\text{ V}$
- $R_{DS(ON)} \leq 90\text{ m}\Omega @ V_{GS} = -10\text{ V}$
- $P_{tot} \leq 1.56\text{ W}$
- $R_{DS(ON)} \leq 120\text{ m}\Omega @ V_{GS} = -4.5\text{ V}$
- $I_D \leq -5\text{ A}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View SOT-89	
2	Drain(D)		
3	Source(S)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-60	-	V
V_{GS}	Gate-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	± 20	V
I_D	Drain Current (DC)	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	- 5	A
I_{DM}^*	Drain Current (Pulsed) *	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = -10\text{ V}$	-	- 12.8	A
P_{tot}	Drain power dissipation	$T_A = 25\text{ }^\circ\text{C}$	-	1.56	W
T_{stg}	Storage Temperature		-55	150	$^\circ\text{C}$
T_J	Junction Temperature		-	150	$^\circ\text{C}$
I_S	Diode Forward Current	$T_A = 25\text{ }^\circ\text{C}$	-	- 5	A
$R_{\theta JA}^{**}$	Thermal Resistance- Junction to Ambient		-	80	$^\circ\text{C/W}$
$R_{\theta JC}^{***}$	Thermal Resistance- Junction to Case		-	2.5	

Notes :

- * Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$
- ** Mounted on PCB of 1 in^2 pad area
- *** Mounted on Large Heat Sink

4. Marking Information

Product Name	Marking
KJ05P06S	<div style="display: inline-block; background-color: black; color: white; padding: 2px;">05P06 YWWXXX</div> YWWXXX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ05P06S	SOT89			1000	

Note: KUAJIEXIN defines " Green " as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC / JEDEC J-STD-020C)

6. Electrical Characteristics ($T_C=25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = -250\text{ }\mu\text{A}$	-60	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = -250\text{ }\mu\text{A}$	-1.0	-	-2.5	V
I_{DSS}	Drain Leakage Current	$V_{DS} = -48\text{ V}, V_{GS} = 0\text{ V}$	-	-	-1.0	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	± 100	nA
$R_{DS(ON)}^a$	On-State Resistance	$V_{GS} = -10\text{ V}, I_{DS} = -2\text{ A}$	-	80	90	m Ω
		$V_{GS} = -4.5\text{ V}, I_{DS} = -1\text{ A}$	-	105	120	
Diode Characteristics						
V_{SD}^a	Diode Forward Voltage	$I_{SD} = -2\text{ A}, V_{GS} = 0\text{ V}$	-	-	-1.3	V
t_{rr}	Reverse Recovery Time	$I_{SD} = -2\text{ A}, dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	15	-	nS
Q_{rr}	Reverse Recovery Charge		-	13	-	nC
Dynamic Characteristics^b						
C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = -30\text{ V}$ Frequency = 1 MHz	-	934	-	pF
C_{oss}	Output Capacitance		-	44	-	
C_{rss}	Reverse Transfer Capacitance		-	37	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = -30\text{ V}, V_{GEN} = -10\text{ V},$ $R_G = 4.5\text{ }\Omega, R_L = 15\text{ }\Omega,$ $I_{DS} = -2\text{ A}$	-	8.4	-	nS
t_r	Turn-on Rise Time		-	23	-	
$t_d(off)$	Turn-off Delay Time		-	109	-	
t_f	Turn-off Fall Time		-	48	-	
Gate Charge Characteristics^b						
Q_g	Total Gate Charge	$V_{DS} = -30\text{ V}, V_{GS} = -10\text{ V},$ $I_{DS} = -2\text{ A}$	-	16	-	nC
Q_{gs}	Gate-Source Charge		-	3.8	-	
Q_{gd}	Gate-Drain Charge		-	1.8	-	

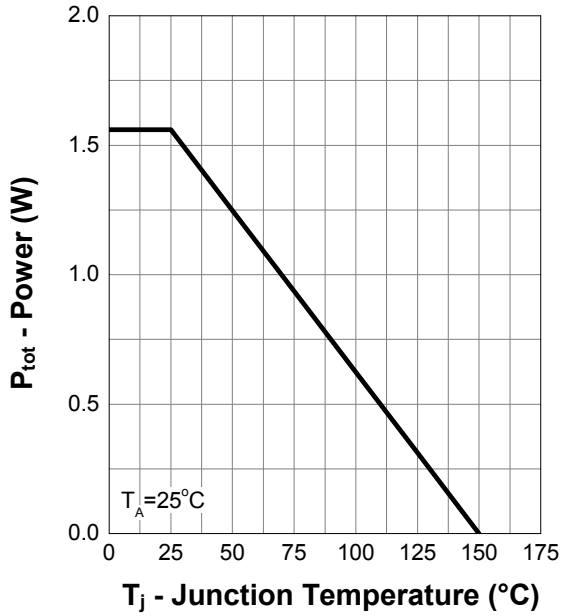
Notes :

 a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

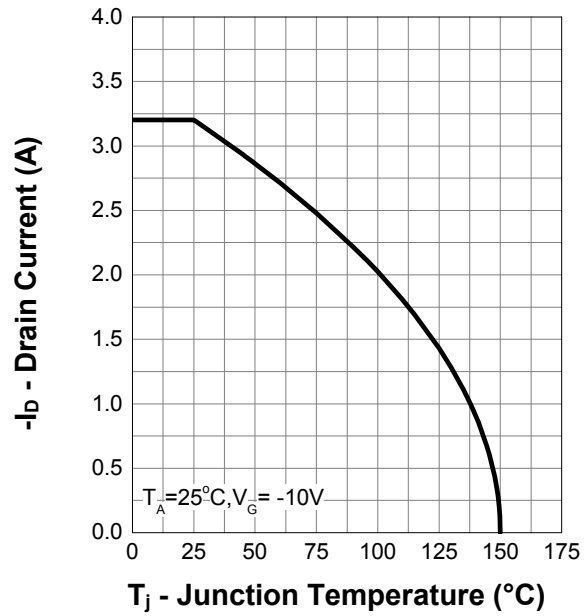
b : Guaranteed by design, not subject to production testing

7. Typical Characteristics (Cont.)

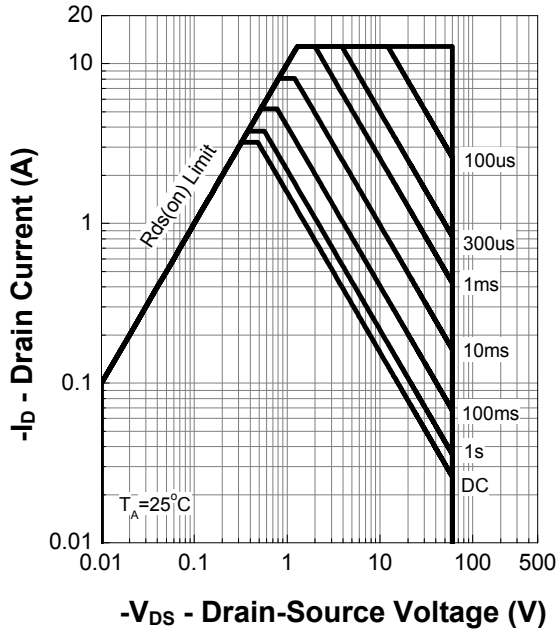
Power Capability



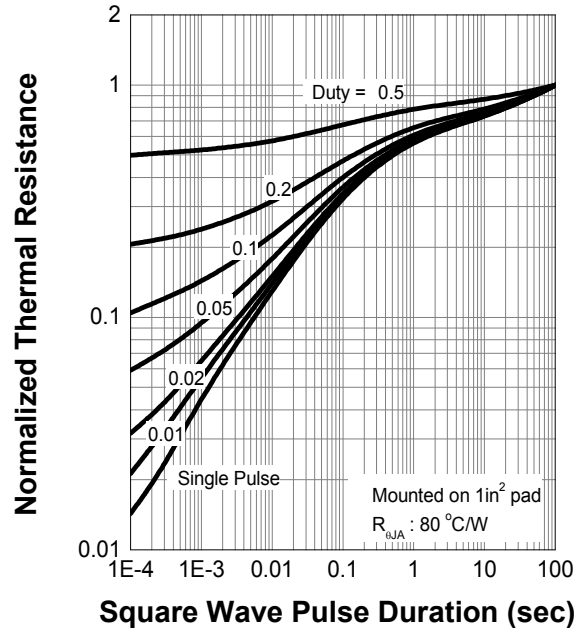
Current Capability



Safe Operation Area

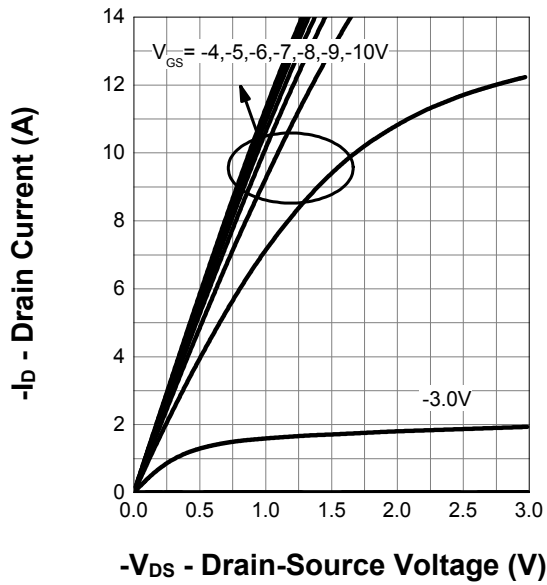


Transient Thermal Impedance

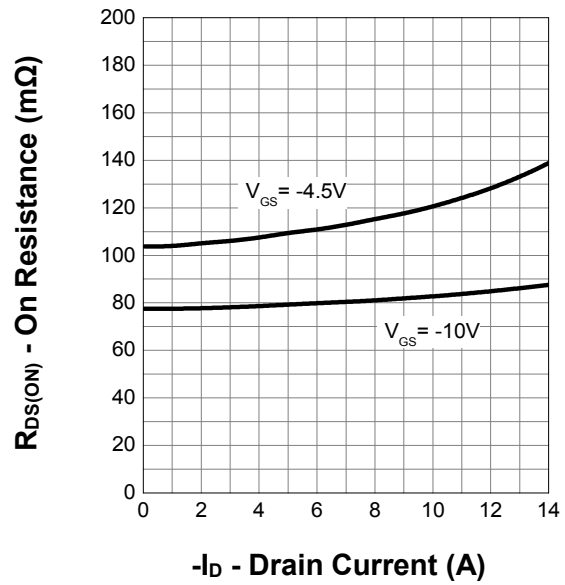


7. Typical Characteristics (Cont.)

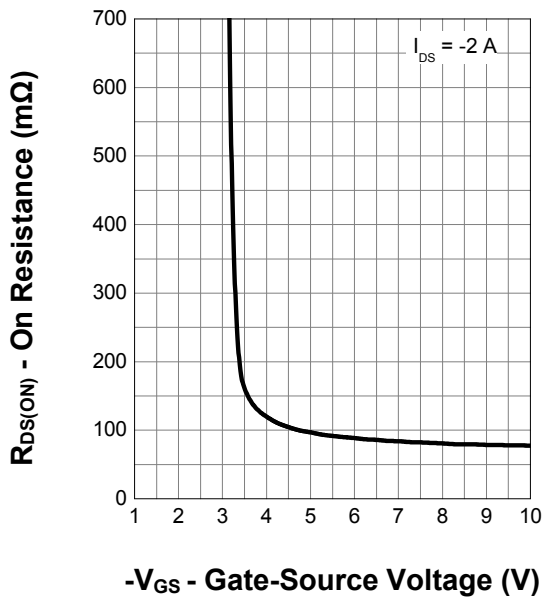
Output Characteristics



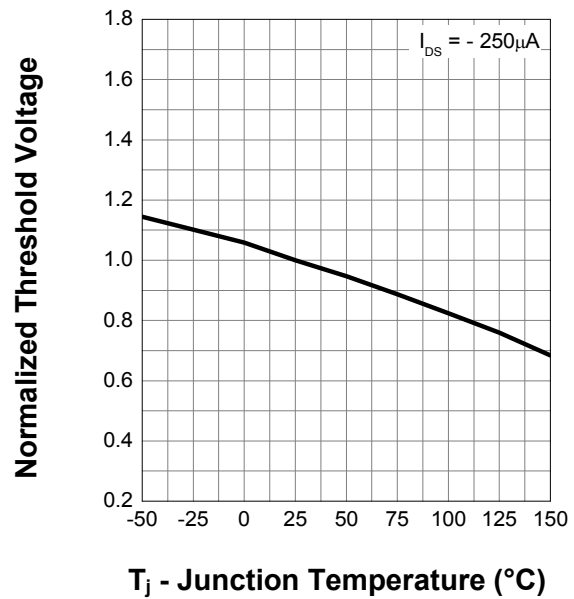
Drain-Source On Resistance



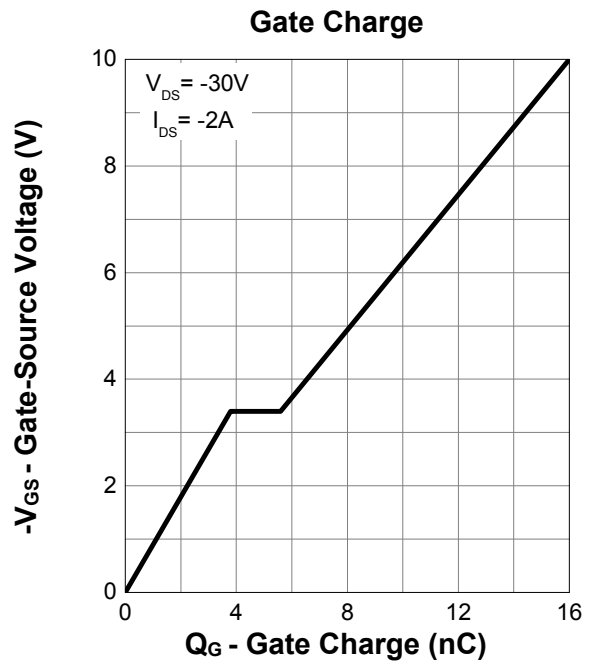
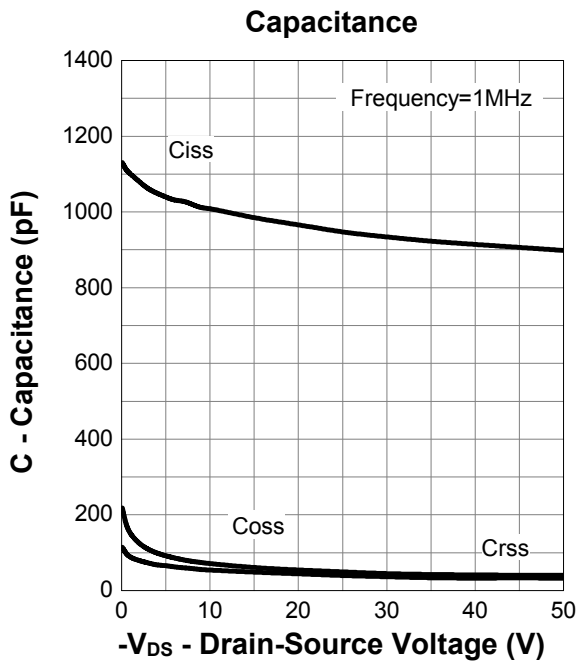
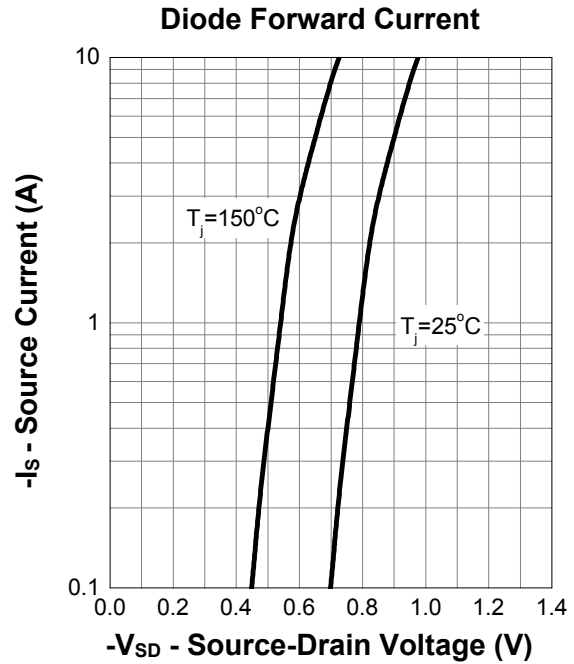
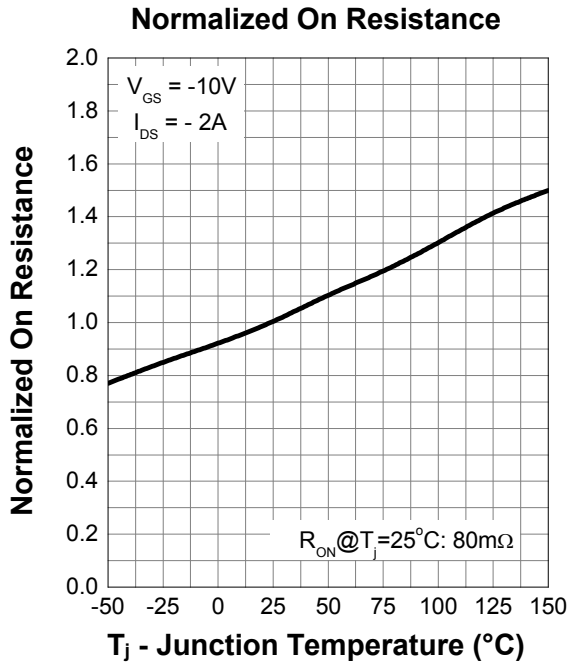
Transfer Characteristics



Normalized Threshold Voltage

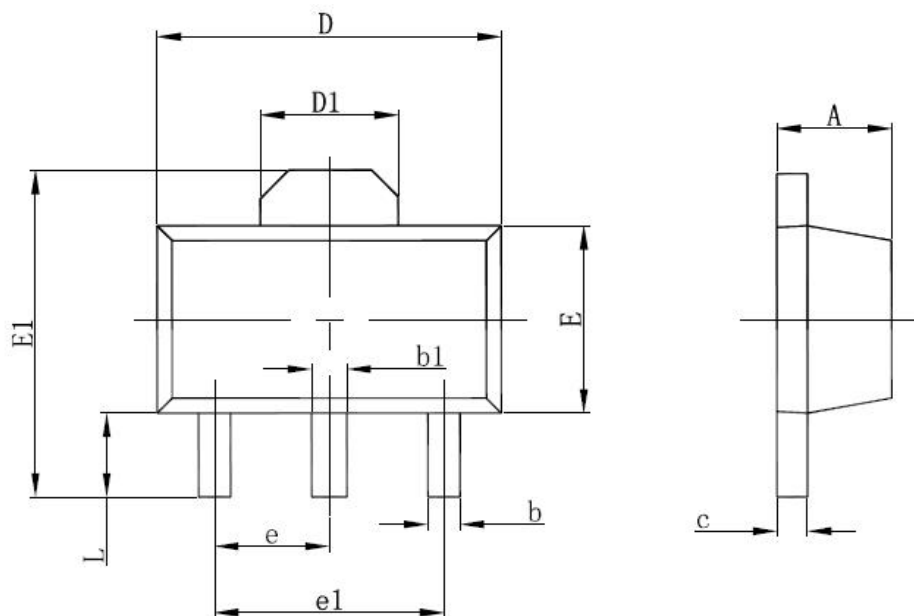


7. Typical Characteristics (Cont.)



8.Package Dimensions

SOT89-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047