

P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Advanced trench cell design
- ☒ Extremely low threshold voltage
- ☒ ESD protected

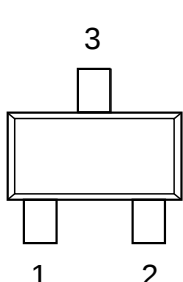
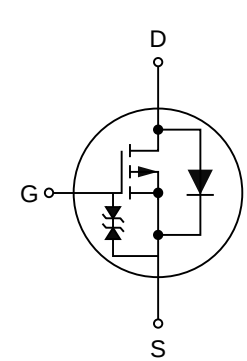
1.2 Applications

- ☒ Portable appliances

1.3 Quick reference

- ☒ $BV \geq -20\text{ V}$
- ☒ $P_{tot} \leq 0.83\text{ W}$
- ☒ $I_D \geq -0.67\text{ A}$
- ☒ $R_{DS(ON)} \leq 0.85\text{ m}\Omega @ V_{GS} = -4.5\text{ V}$
- ☒ $R_{DS(ON)} \leq 1.20\text{ m}\Omega @ V_{GS} = -2.5\text{ V}$
- ☒ $R_{DS(ON)} \leq 1.40\text{ m}\Omega @ V_{GS} = -1.8\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View SOT-523	
2	Source(S)		
3	Drain(D)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A=25^{\circ}\text{C}$	-20	-	V
V_{GS}	Gate-Source Voltage	$T_A=25^{\circ}\text{C}$	-	± 10	V
I_D^*	Drain Current	$T_A=25^{\circ}\text{C}, V_{GS}=-4.5\text{ V}$	-	-1.1	A
I_D^*	Drain Current	$T_A=100^{\circ}\text{C}, V_{GS}=-4.5\text{ V}$	-	-0.67	A
$I_{DM}^{*,**}$	Pulsed Drain Current	$T_A=25^{\circ}\text{C}$	-	-2.6	A
P_{tot}	Total Power Dissipation	$T_A=25^{\circ}\text{C}$	-	0.83	W
		$T_A=100^{\circ}\text{C}$	-	0.33	W
T_{stg}	Storage Temperature		-55	150	$^{\circ}\text{C}$
T_J	Junction Temperature		-	150	$^{\circ}\text{C}$
I_S	Diode Forward Current	$T_A=25^{\circ}\text{C}$	-	-2.6	A
$R_{\theta JA}^*$	Thermal Resistance-Junction to Ambient		-	150	$^{\circ}\text{C/W}$

Notes:

* Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$

** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

4. Marking Information

Product Name	Marking
KJ850R02PS5	39K

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ850R02PS5	SOT-523	-	-	3000	

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_A=25°C Unless Otherwise Noted)

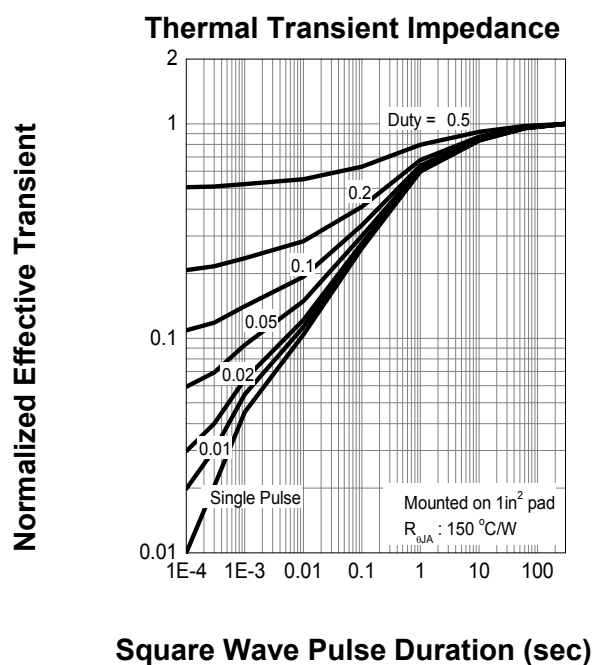
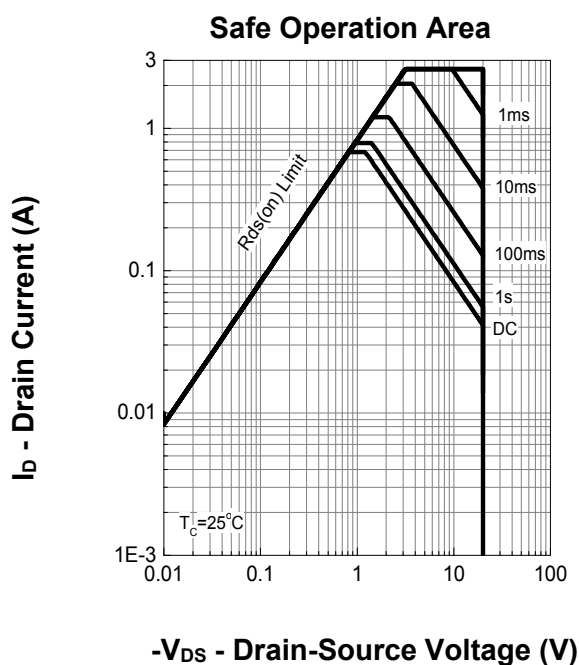
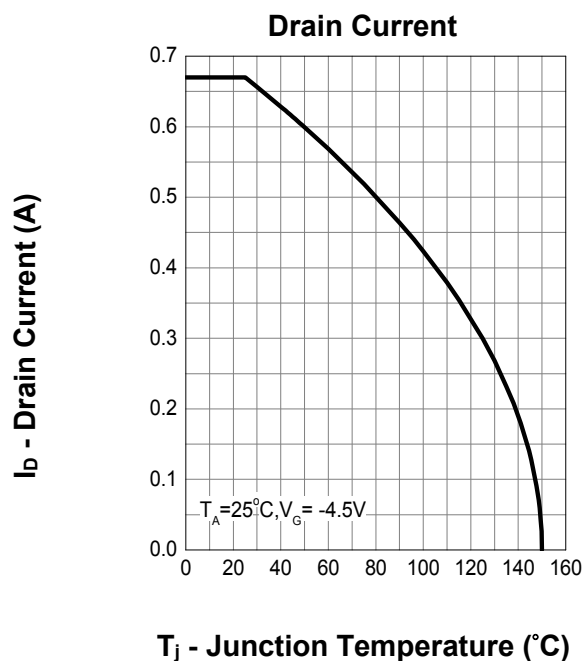
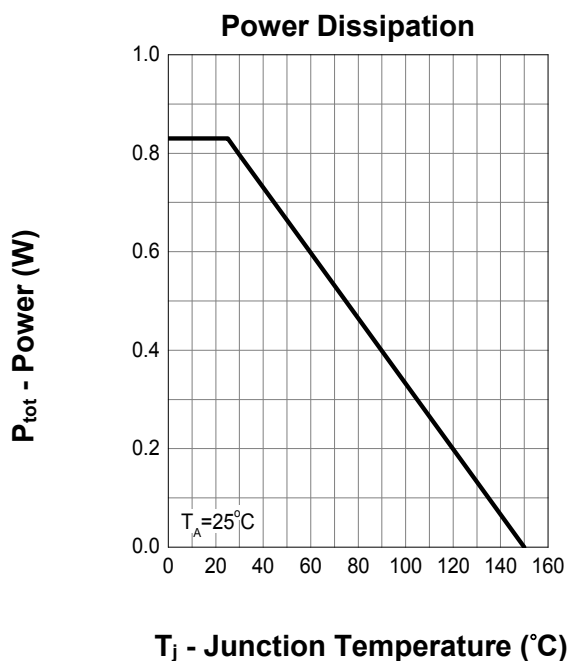
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _D =-250 μA	-20	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250 μA	-0.3	-0.65	-1.0	V
I _{DSS}	Drain Leakage Current	V _{DS} =-20 V, V _{GS} =0 V	-	-	-1	μA
		T _J =85°C	-	-	-30	μA
I _{GSS}	Gate Leakage Current	V _{DS} =0 V, V _{GS} =±8 V	-	-	±10	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =-4.5 V, I _D =-0.5 A	-	0.65	0.85	Ω
		V _{GS} =-2.5 V, I _D =-0.2 A	-	0.95	1.2	
		V _{GS} =-1.8 V, I _D =-0.04 A	-	1.15	1.4	
		V _{GS} =-1.5 V, I _D =-0.01 A	-	2	-	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =-0.5 A, V _{GS} =0 V	-	-	-1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =-0.5 A dI _{SD} /dt=100 A/μs	-	70	-	ns
Q _{rr}	Reverse Recovery Charge		-	68	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =-10 V Frequency=1 MHz	-	87	-	pF
C _{oss}	Output Capacitance		-	15	-	
C _{rss}	Reverse Transfer Capacitance		-	8.2	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =-10 V, V _{GEN} =-4.5 V R _G =4.5 Ω, R _L =20 Ω I _{DS} =-0.67 A	-	5.6	-	ns
t _r	Turn-on Rise Time		-	5.3	-	
t _{d(off)}	Turn-off Delay Time		-	30	-	
t _f	Turn-off Fall Time		-	21	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =-10 V, V _{GS} =-4.5 V I _{DS} =-0.67 A	-	1.8	-	nC
Q _{gs}	Gate-Source Charge		-	0.82	-	
Q _{gd}	Gate-Drain Charge		-	0.59	-	

Notes:

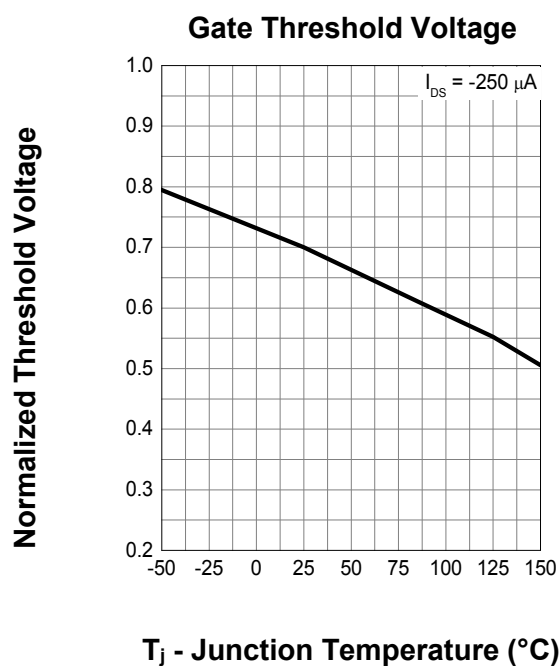
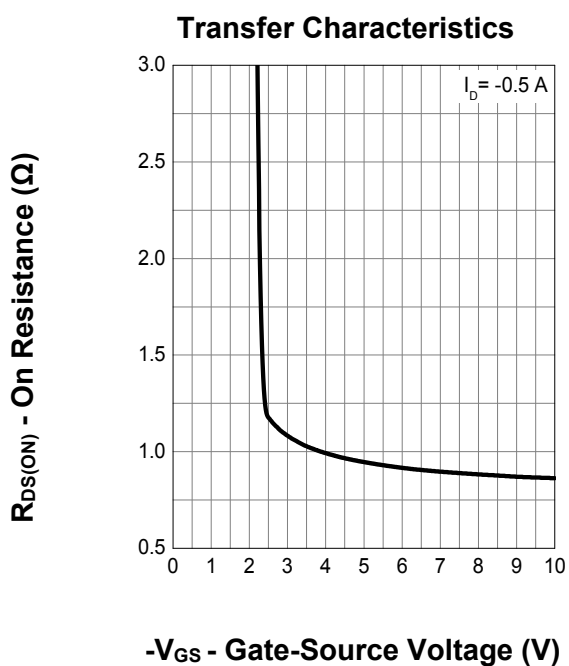
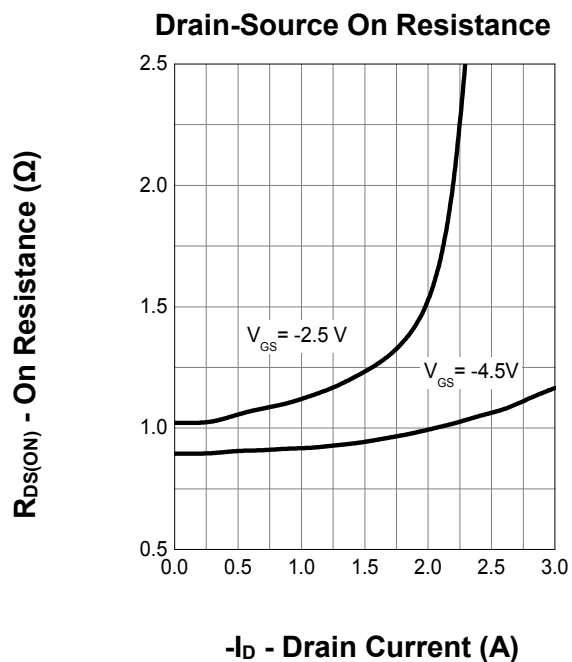
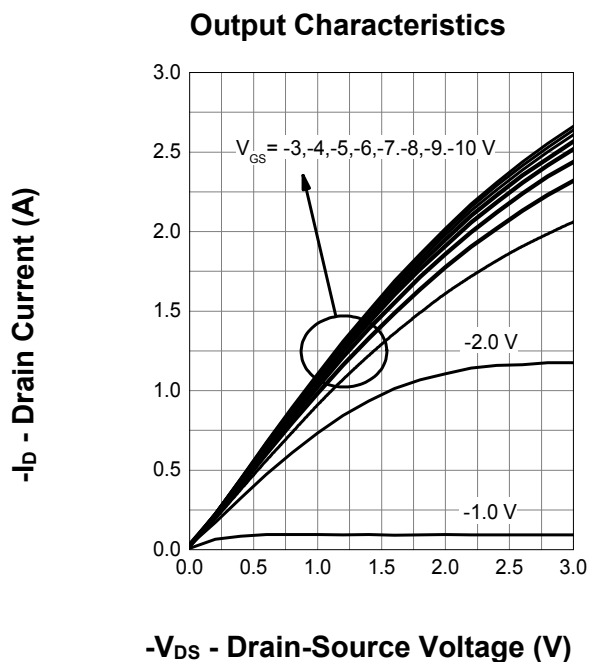
a: Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%

b: Guaranteed by design, not subject to production testing

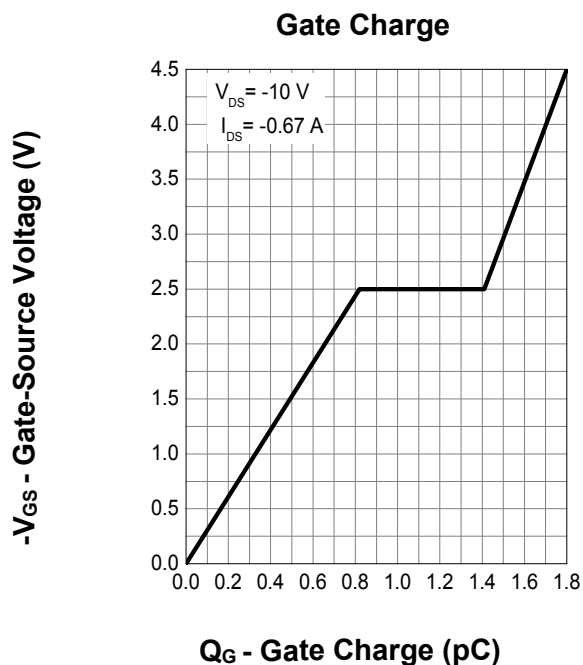
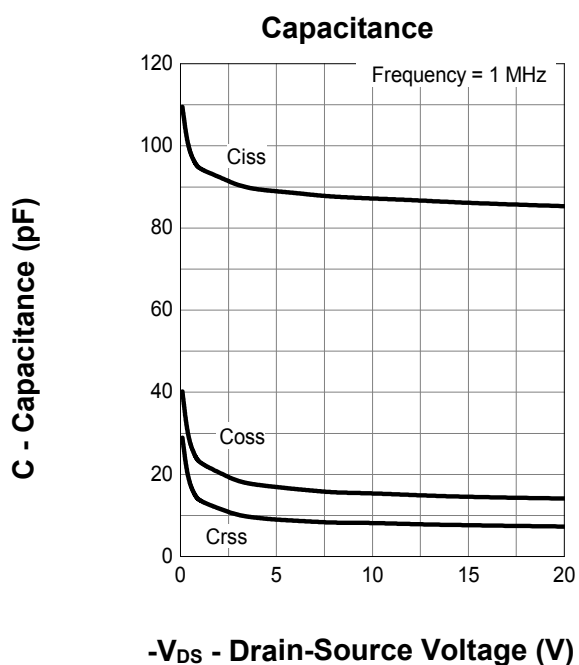
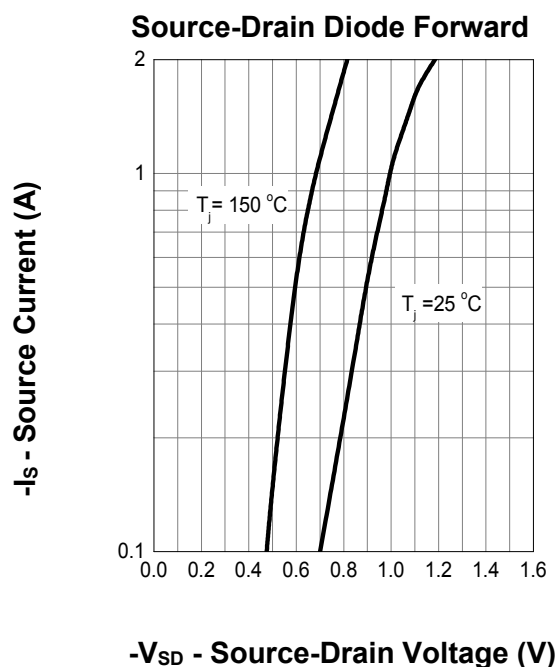
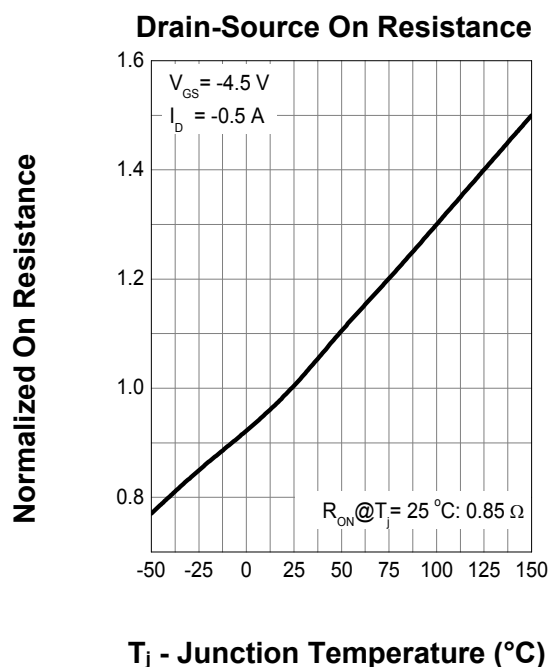
7. Typical Characteristics



7. Typical Characteristics (cont.)

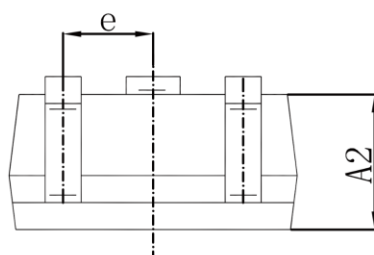
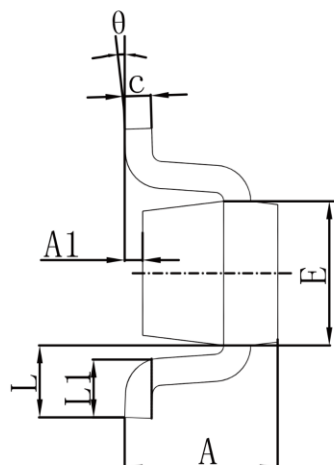
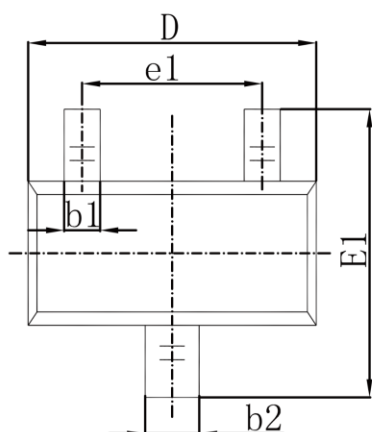


7. Typical Characteristics (cont.)



8. Package Dimensions

SOT-523 Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°