

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

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

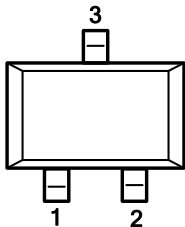
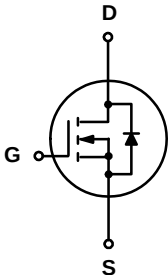
1.2 Applications

- ☒ Portable appliances
- ☒ Battery management

1.3 Quick reference

- ☒ $BV \geq 30\text{ V}$
- ☒ $P_{\text{tot}} \leq 1.4\text{ W}$
- ☒ $I_D \leq 5.8\text{ A}$
- ☒ $R_{\text{DS(ON)}} \leq 25\text{ m}\Omega @ V_{\text{GS}} = 10\text{ V}$
- ☒ $R_{\text{DS(ON)}} \leq 40\text{ m}\Omega @ V_{\text{GS}} = 4.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View SOT23	
2	Source(S)		
3	Drain(D)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_A = 25\text{ }^{\circ}\text{C}$	30	-	V
V_{GS}	Gate-Source Voltage	$T_A = 25\text{ }^{\circ}\text{C}$	-	± 20	V
I_D^*	Drain Current	$T_A = 25\text{ }^{\circ}\text{C}, V_{GS} = 4.5\text{ V}$	-	5.8	A
I_{DM}^{***}	Pulsed Drain Current	$T_A = 25\text{ }^{\circ}\text{C}, V_{GS} = 4.5\text{ V}$	-	30	A
P_{tot}^*	Total Power Dissipation	$T_A = 25\text{ }^{\circ}\text{C}$	-	1.4	W
		$T_A = 100\text{ }^{\circ}\text{C}$	-	0.8	
T_{stg}	Storage Temperature		- 55	150	$^{\circ}\text{C}$
T_J	Junction Temperature		-	150	$^{\circ}\text{C}$
I_S^*	Diode Forward Current	$T_A = 25\text{ }^{\circ}\text{C}$	-	5.8	A
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	150	$^{\circ}\text{C} / \text{W}$

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
KJ3404S	3404

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ3404S	SOT23			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 _{DS} = 250 μA	30	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	1	1.5	2.5	V
I _{DSS}	Drain Leakage Current	V _{DS} = 16 V, V _{GS} = 0 V	-	-	1	μA
		T _J = 85 °C	-	-	30	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ± 12 V, V _{DS} = 0 V	-	-	± 100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = 10 V, I _{DS} = 5 A	-	-	25	mΩ
		V _{GS} = 4.5 V, I _{DS} = 4 A	-	-	40	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 5 A, V _{GS} = 0 V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =5 A, dI _{SD} /dt = 100 A/μs	-	38	-	nS
Q _{rr}	Reverse Recovery Charge		-	17	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 15 V Frequency = 1 MHz	-	560	-	pF
C _{oss}	Output Capacitance		-	125	-	
C _{rss}	Reverse Transfer Capacitance		-	90	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 15 V, V _{GEN} = 10 V, R _G = 4.5 Ω, R _L = 3.3 Ω, I _{DS} = 5 A	-	10	-	nS
t _r	Turn-on Rise Time		-	4	-	
t _{d(off)}	Turn-off Delay Time		-	27	-	
t _f	Turn-off Fall Time		-	5	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = 15 V, V _{GS} = 4.5 V, I _{DS} = 5 A	-	7	-	nC
Q _{gs}	Gate-Source Charge		-	1.5	-	
Q _{gd}	Gate-Drain Charge		-	3	-	

Notes :

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

b : Guaranteed by design, not subject to production testing

7. Typical Characteristics

Figure1: Output Characteristics

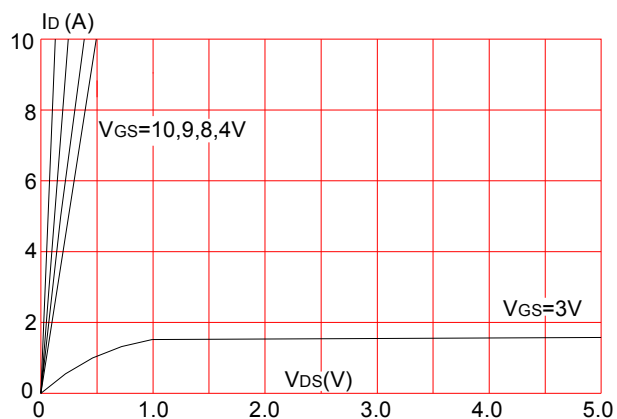


Figure 2: Typical Transfer Characteristics

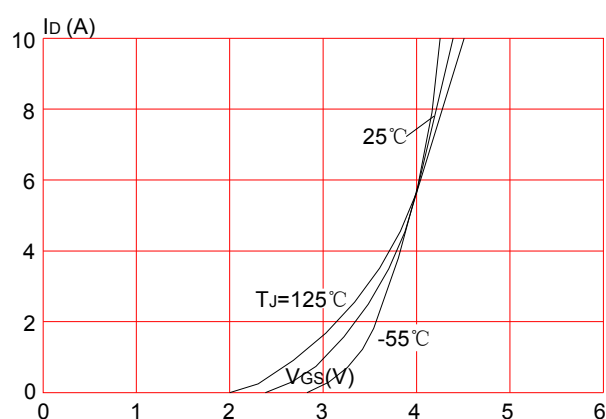


Figure 3: On-resistance vs. Drain Current

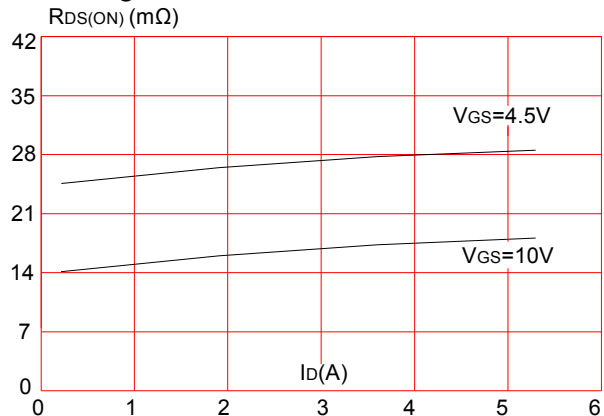


Figure 4: Body Diode Characteristics

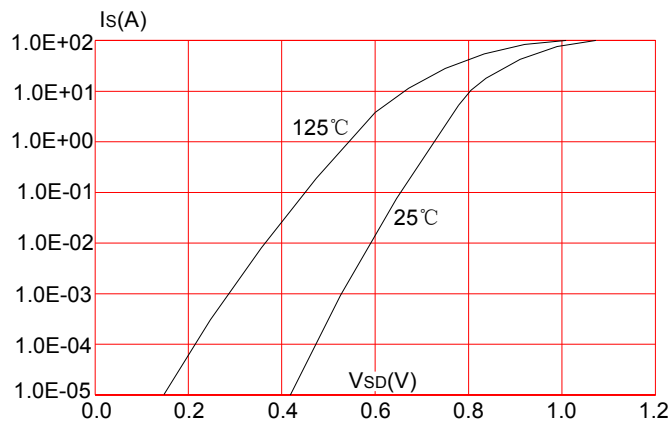


Figure 5: Gate Charge Characteristics

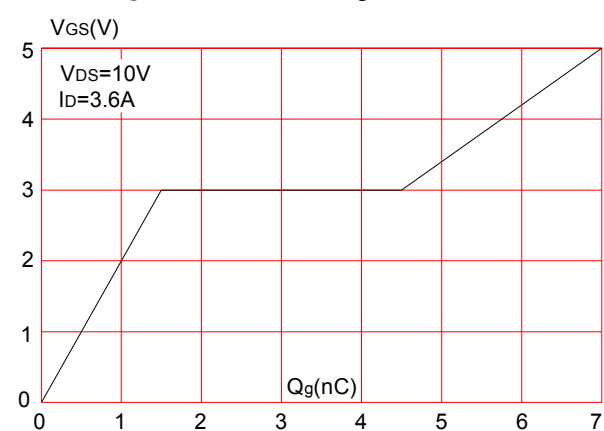
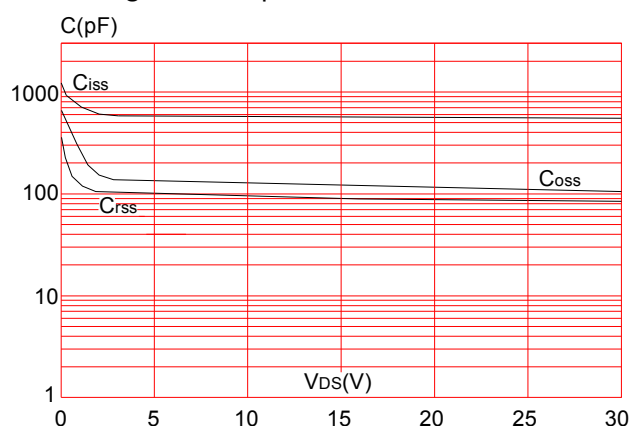


Figure 6: Capacitance Characteristics



7. Typical Characteristics (cont.)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

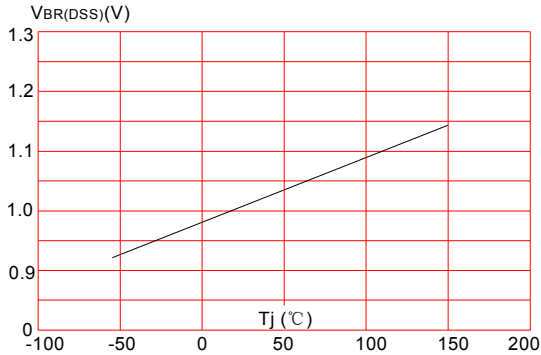


Figure 8: Normalized on Resistance vs. Junction Temperature

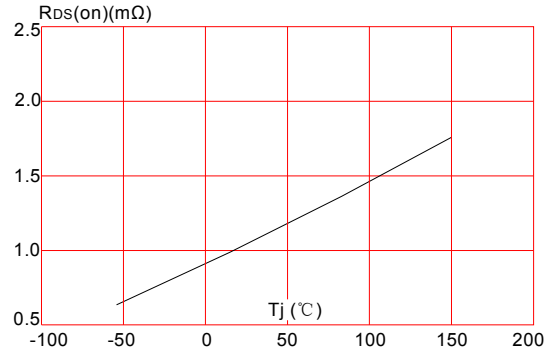


Figure 9: Maximum Safe Operating Area

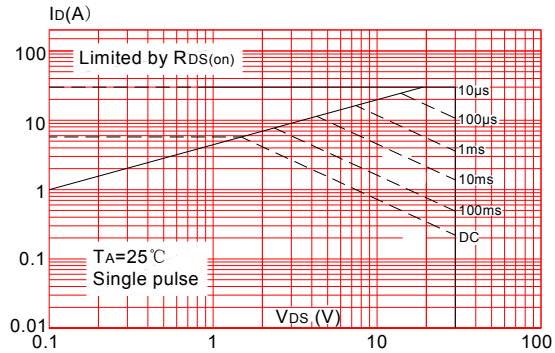


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

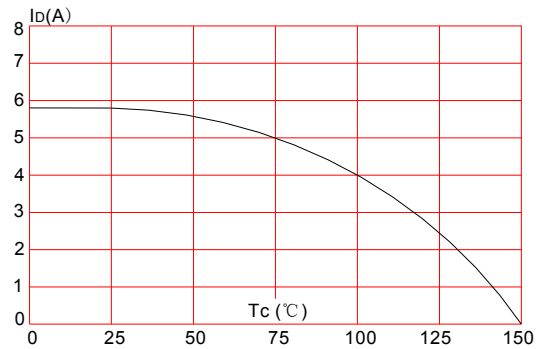
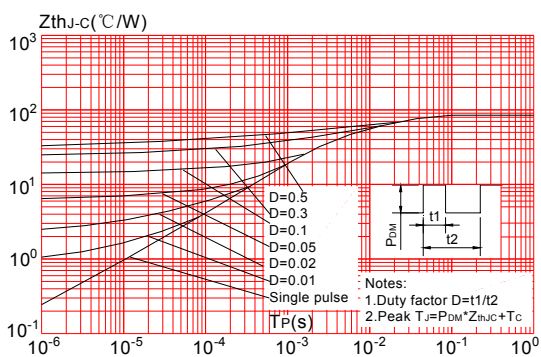
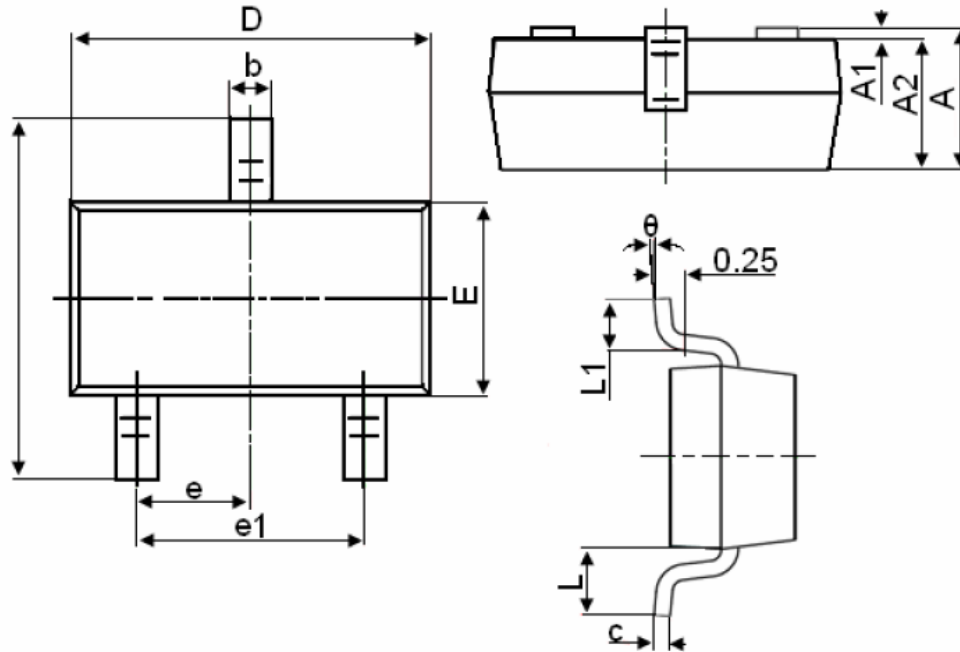


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient (SOT-23)



8. Package Dimensions

SOT23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°