

Dual N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- CSP package
- Advanced trench cell design
- Extremely low threshold voltage
- ESD protected


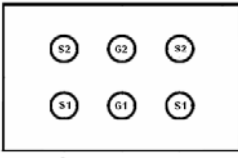
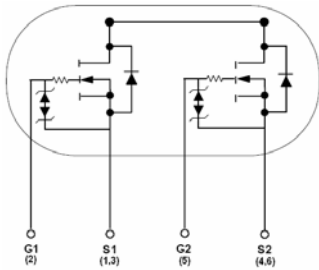
1.2 Applications

- Portable appliances
- Battery management

1.3 Quick reference

- $BV \geq 24\text{ V}$
- $P_{\text{tot}} \leq 2\text{ W}$
- $I_s \leq 18\text{ A}$
- $R_{\text{SS(ON)}} \leq 5\text{ m}\Omega @ V_{\text{GS}} = 4.5\text{ V}$
- $R_{\text{SS(ON)}} \leq 6\text{ m}\Omega @ V_{\text{GS}} = 3.9\text{ V}$
- $R_{\text{SS(ON)}} \leq 7\text{ m}\Omega @ V_{\text{GS}} = 2.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1,3	Source(S1)	<p style="text-align: center;">CSP Package</p>  <p style="text-align: center;">Top View</p>  <p style="text-align: center;">Bottom</p>	
2	Gate(G1)		
4,6	Source(S2)		
5	Gate(G1)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{SS}	Source-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	24	V
V_{GS}	Gate-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	± 12	V
I_S^*	Source Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 4.5\text{ V}$	-	18	A
I_{SM}^{***}	Pulsed Source Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 4.5\text{ V}$	-	77	A
P_{tot}^*	Total Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	-	2	W
		$T_A = 70\text{ }^\circ\text{C}$	-	1	
T_{stg}	Storage Temperature		- 55	150	$^\circ\text{C}$
T_J	Junction Temperature		-	150	$^\circ\text{C}$
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	278	$^\circ\text{C} / \text{W}$

Notes :

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

** Pulse width $\leq 10\text{ }\mu\text{s}$, duty cycle $\leq 1\%$

4. Marking Information

Product Name	Marking
KJC602	

5. Ordering Information

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJC602	CSP				

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 ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{SSS}	Source-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_S = 250\text{ }\mu\text{A}$	24	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{SS} = 10\text{ V}, I_S = 250\text{ }\mu\text{A}$	0.4	0.7	1.0	V
I_{SSS}	Zero Gate Voltage Source Current	$V_{SS} = 20\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	μA
		$T_J = 85\text{ }^\circ\text{C}$	-	-	30	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = \pm 10\text{ V}, V_{DS} = 0\text{ V}$	-	-	± 10	μA
$R_{SS(ON)}^a$	Source-source On-State Resistance	$V_{GS} = 4.5\text{ V}, I_S = 5\text{ A}$	-	4	5	m Ω
		$V_{GS} = 3.9\text{ V}, I_S = 4\text{ A}$	-	4.5	6	
		$V_{GS} = 2.5\text{ V}, I_S = 3\text{ A}$	-	5	7	
Diode Characteristics						
V_{FSS}^a	Diode Forward Voltage	$I_S = 5\text{ A}, V_{GS} = 0\text{ V}$	-	0.7	1.3	V
Dynamic Characteristics^b						
C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{SS} = 10\text{ V}$ Frequency = 1 MHz	-	3300	-	pF
C_{oss}	Output Capacitance		-	265	-	
C_{rss}	Reverse Transfer Capacitance		-	240	-	
$t_d(on)$	Turn-on Delay Time	$V_{SS} = 10\text{ V}, V_{GEN} = 4.5\text{ V},$ $R_G = 6\text{ }\Omega, R_L = 10\text{ }\Omega,$ $I_S = 5\text{ A}$	-	18	-	ns
t_r	Turn-on Rise Time		-	40	-	
$t_d(off)$	Turn-off Delay Time		-	164	-	
t_f	Turn-off Fall Time		-	118	-	
Gate Charge Characteristics^b						
Q_g	Total Gate Charge	$V_{GS} = 4.5\text{ V}, V_{SS} = 10\text{ V},$ $I_S = 7.7\text{ A}$	-	63	-	nC

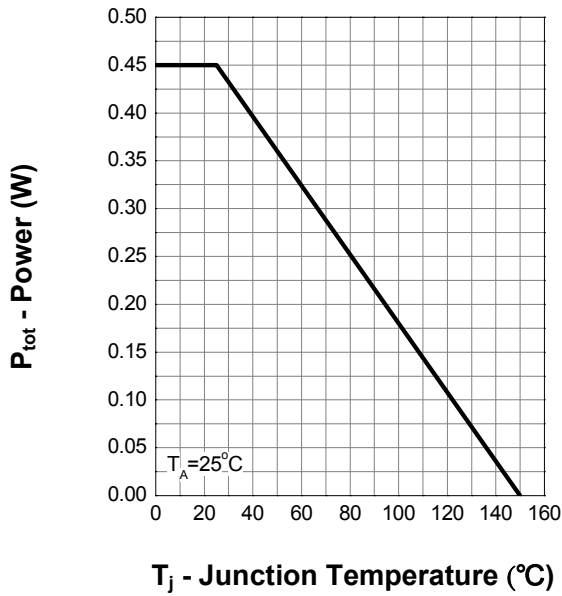
Notes :

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

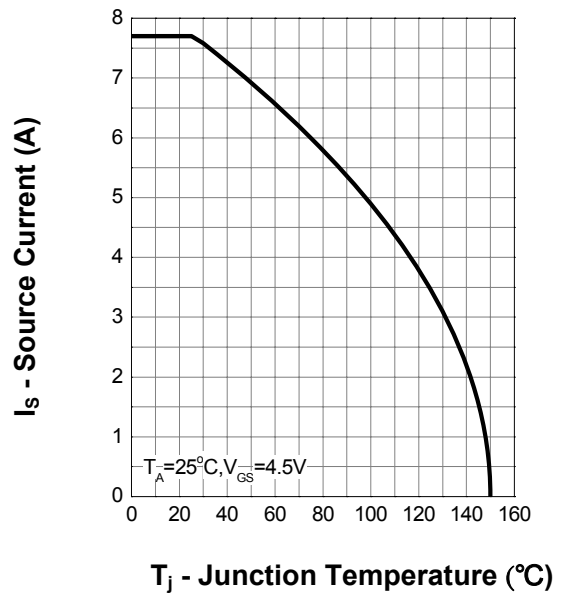
b : Guaranteed by design, not subject to production testing

7. Typical Characteristics

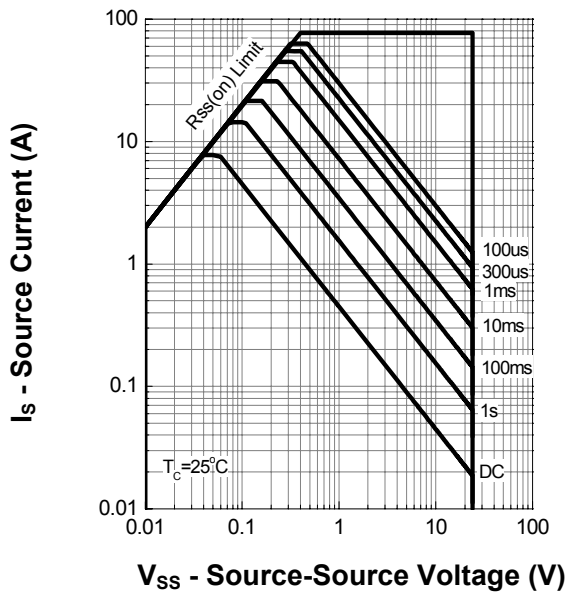
Power Dissipation



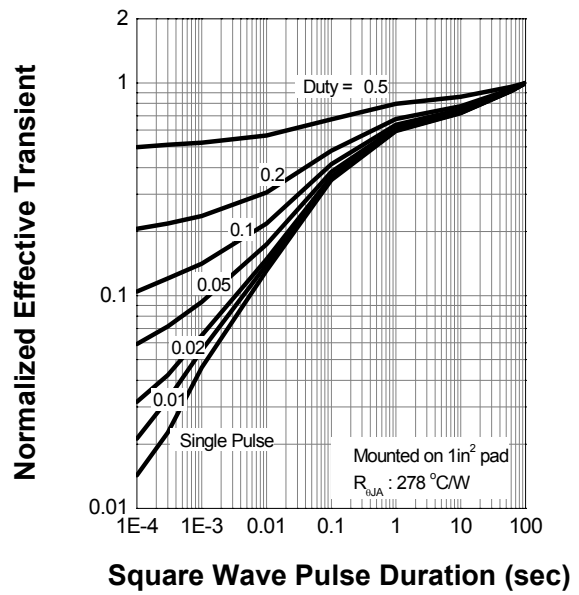
Source Current



Safe Operation Area

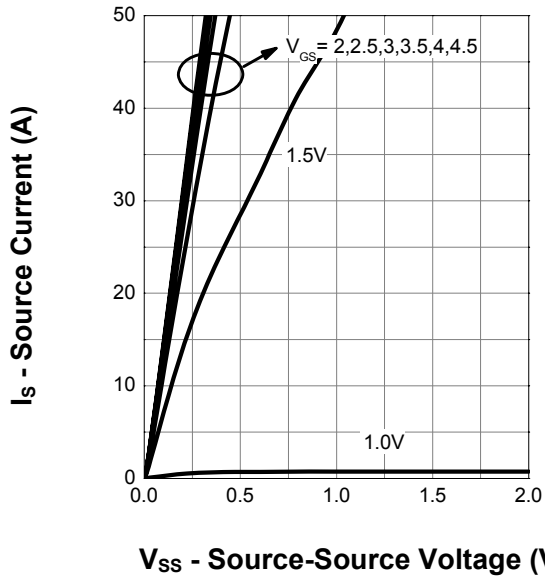


Thermal Transient Impedance

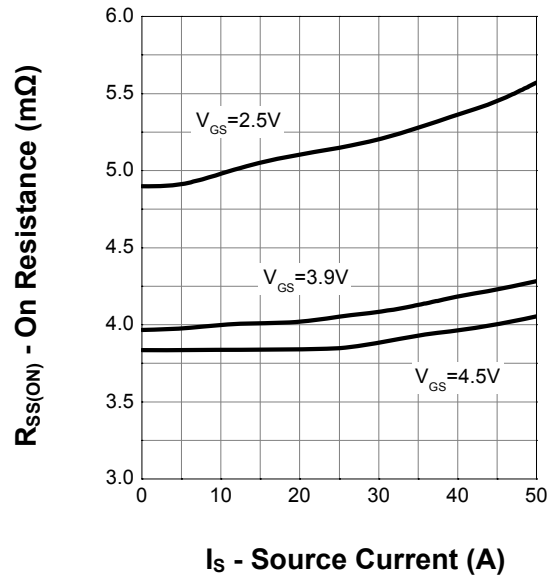


7. Typical Characteristics (cont.)

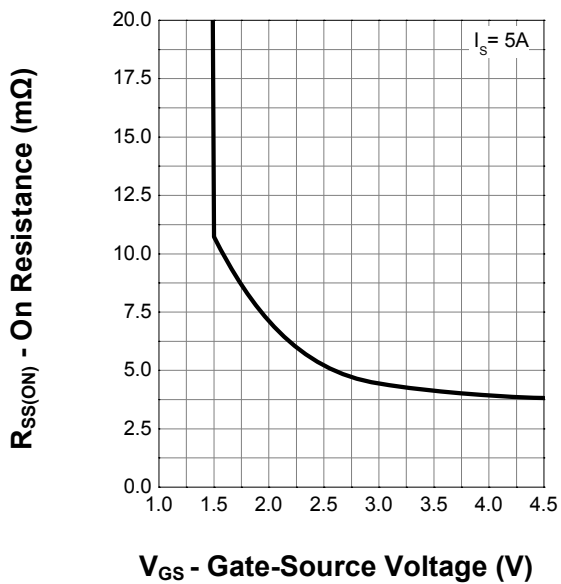
Output Characteristics



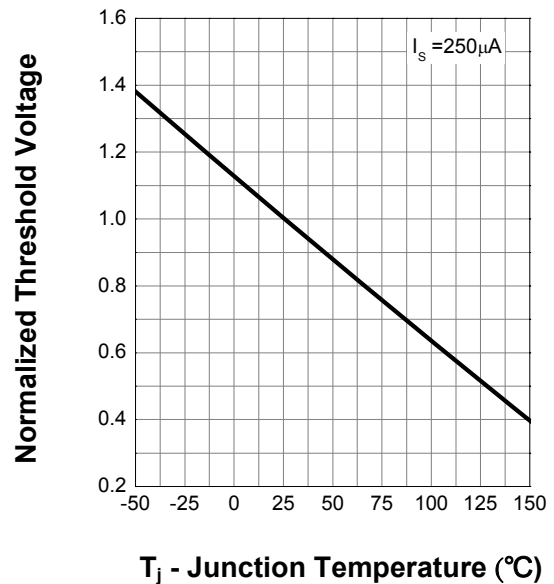
Source-Source On Resistance



Transfer Characteristics

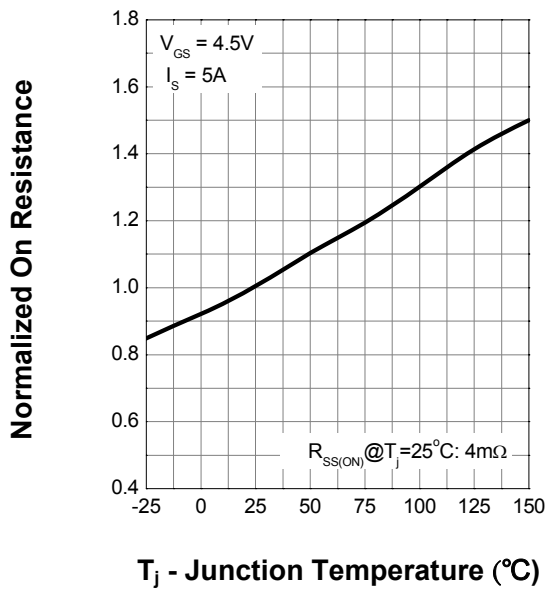


Gate Threshold Voltage

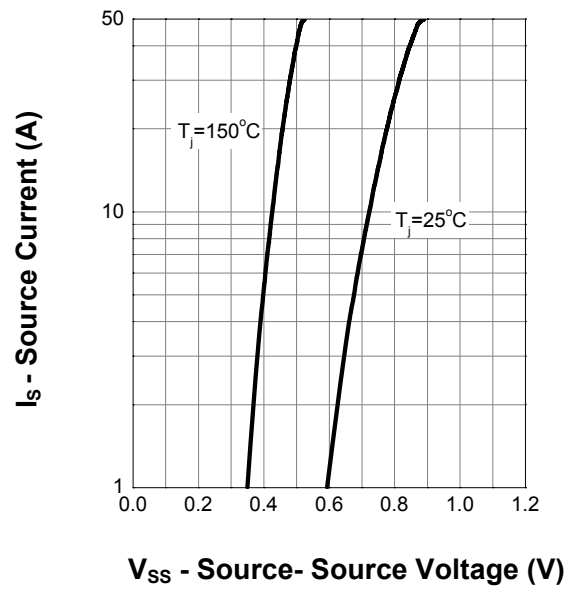


7. Typical Characteristics (cont.)

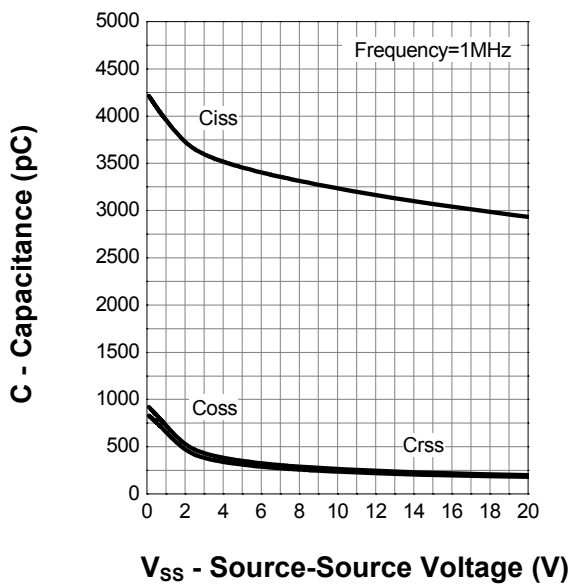
Source-Source On Resistance



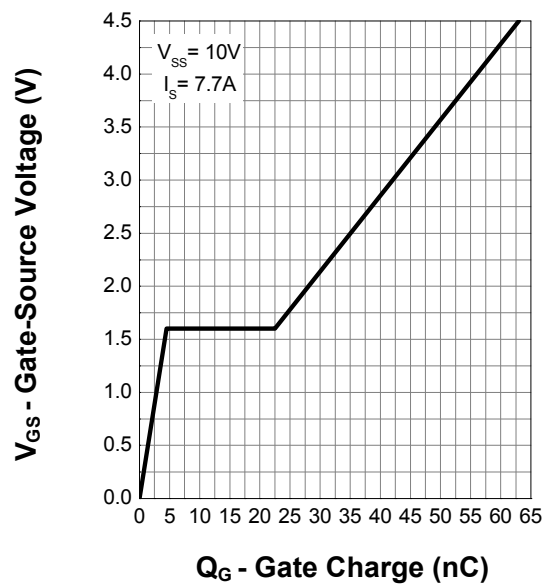
Body Diode Characteristics



Capacitance



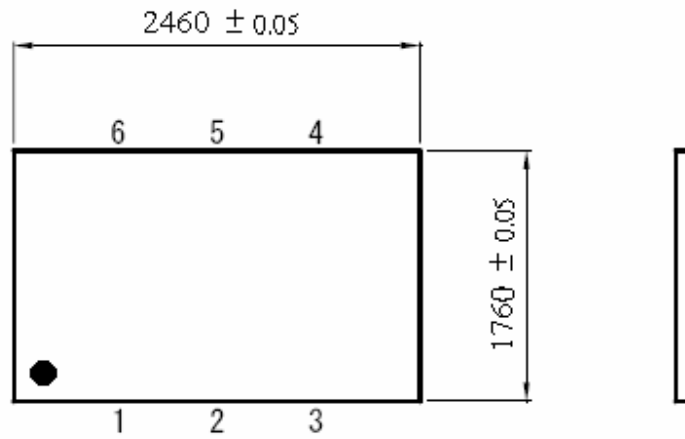
Gate Charge



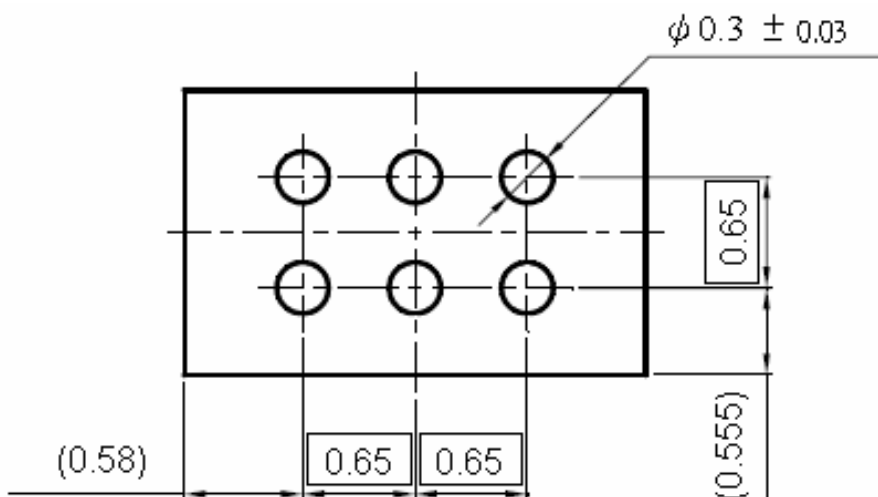
8.Package Dimensions

- Design Information

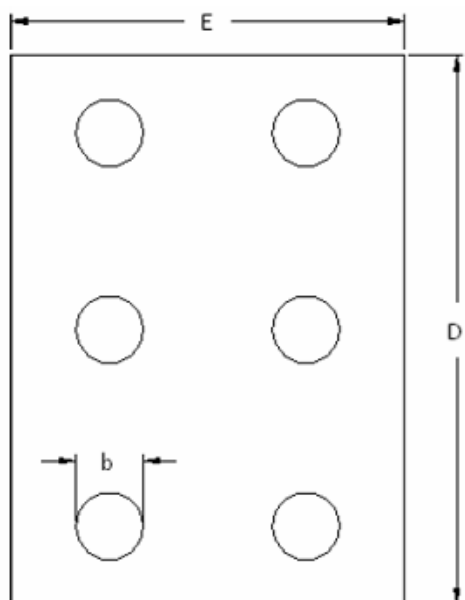
Unit: um



Unit: mm

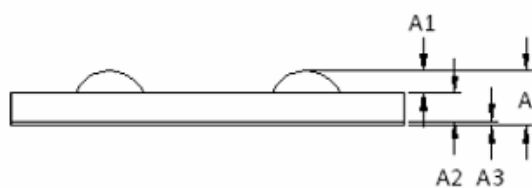


- Structure Information

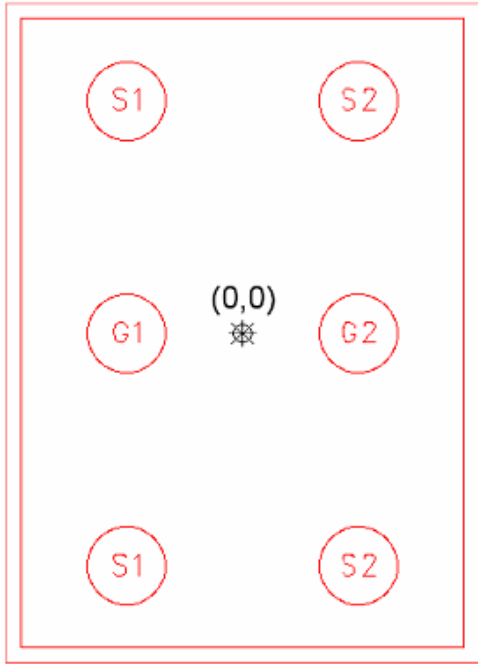


SYMBOL	DIMENSION(mm)		
	MIN	NOM	MAX
A	0.145	0.195	0.245
A1	0.035	0.050	0.065
A2	0.095	0.125	0.155
A3	0.010	0.020	0.030
b	0.285	0.300	0.315
E	1.710	1.760	1.810
D	2.410	2.460	2.510

Min. Ball pitch : 0.650



- Ball Map (View : Chip side Up)



Pin Number	X Coord	Y Coord
S1	-325.00	650.00
S2	325.00	650.00
G1	-325.00	0.00
G2	325.00	0.00
S1	-325.00	-650.00
S2	325.00	-650.00