

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Trench Power MV MOSFET technology
- ☒ Voltage controlled small signal switch
- ☒ Low input Capacitance
- ☒ Fast Switching Speed
- ☒ Low Input / Output Leakage
- ☒ ESD protected Up to 2.5KV (HBM)

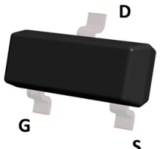
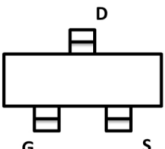
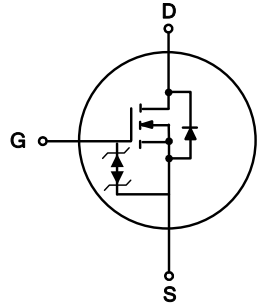
1.2 Applications

- ☒ Battery operated systems
- ☒ Solid-state relays
- ☒ Direct logic-level interface: TTL/CMOS

1.3 Quick reference

- ☒ $BV \geq 60\text{ V}$
- ☒ $I_D \leq 300\text{ mA}$
- ☒ $R_{DS(ON)} \leq 3.5\ \Omega @ V_{GS} = 10\text{ V}$
- ☒ $R_{DS(ON)} \leq 5.0\ \Omega @ V_{GS} = 4.5\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	  Top View SOT-323	
2	Source(S)		
3	Drain(D)		

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	60	V
Gate-source Voltage		V_{GS}	± 20	V
Peak Gate-source Voltage $T_p < 50\text{ }\mu\text{s}$, duty cycle = 0.25		V_{GSM}	± 40	V
Drain Current	$T_A = 25\text{ }^{\circ}\text{C}$ @ Steady State	I_D	300	mA
	$T_A = 70\text{ }^{\circ}\text{C}$ @ Steady State		270	mA
Pulsed Drain Current ^A		I_{DM}	1.5	A
Total Power Dissipation @ $T_A = 25\text{ }^{\circ}\text{C}$		P_D	350	mW
Thermal Resistance Junction-to-Ambient @ Steady State ^B		$R_{\theta JA}$	357	$^{\circ}\text{C} / \text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Notes :

A. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty cycle $\leq 2\%$.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

4. Marking Information

Product Name	Marking
KJ2N7002KW	72 K YWXX YWXX: Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ2N7002KW	SOT-323			3000	

Note: KUAJIJEXIN 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)

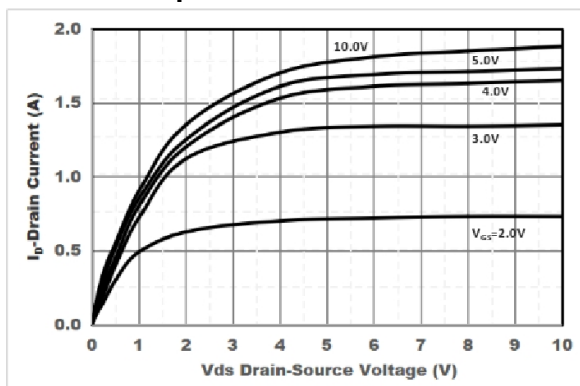
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ± 20 V, V _{DS} = 0 V			±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0	1.6	2.5	V
Static Drain-Source On-esistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 300 mA		2.0	3.5	Ω
		V _{GS} = 4.5 V, I _D = 200 mA		3.0	5.0	
Diode Forward Voltage	V _{SD}	I _S = 300 mA, V _{GS} = 0 V			1.2	V
Maximum Body-Diode Continuous Current	I _S				300	mA
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} = 30 V, V _{GS} = 0 V, f = 1 MHZ		15		pF
Output Capacitance	C _{oss}			9.5		
Reverse Transfer Capacitance	C _{rss}			5.5		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} = 15 V, V _{DS} = 30 V, I _D = 0.3 A		1.7	2.4	nC
Turn-on Delay Time	t _{D(on)}	V _{GS} = 10 V, V _{DD} = 30 V, I _D = 300 mA, R _{GEN} = 6 Ω		5		ns
Turn-off Delay Time	t _{D(off)}			17		
Reverse recovery Time	t _{rr}	V _{GS} = 0 V, I _S = 300 mA, V _R = 25 V, dI _S /dt = 100 A/μs		30		ns

Notes :

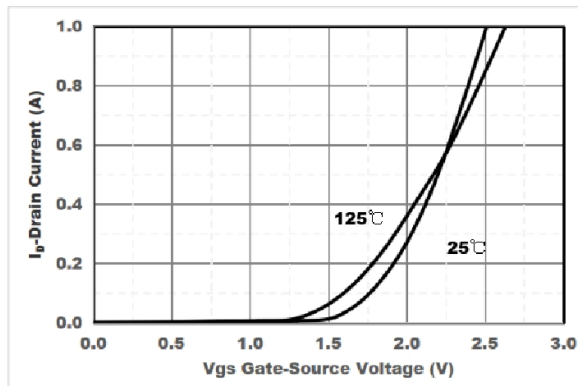
- A. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.
- B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

7. Typical Performance Characteristics

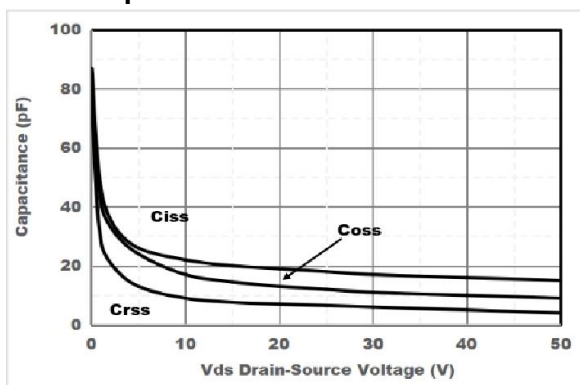
Output Characteristics



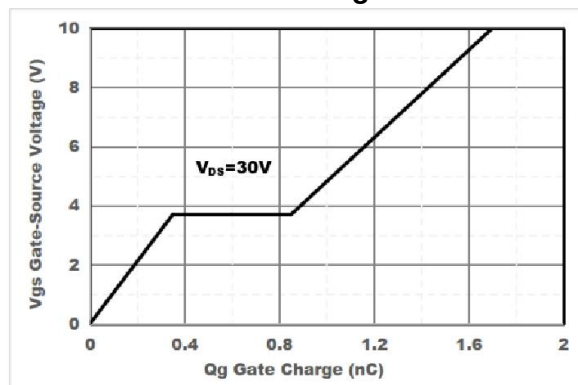
Transfer Characteristics



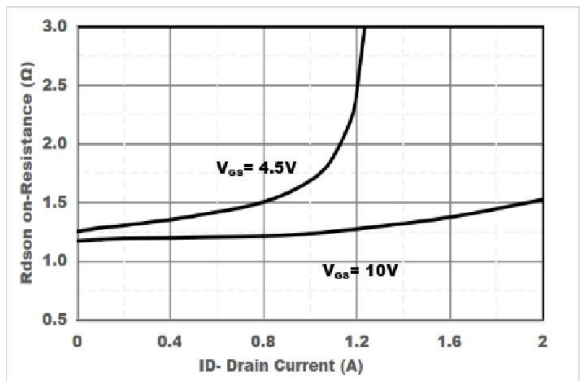
Capacitance Characteristics



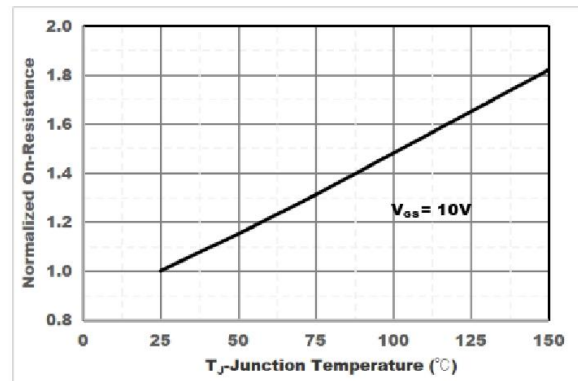
Gate Charge



Drain-Source on Resistance

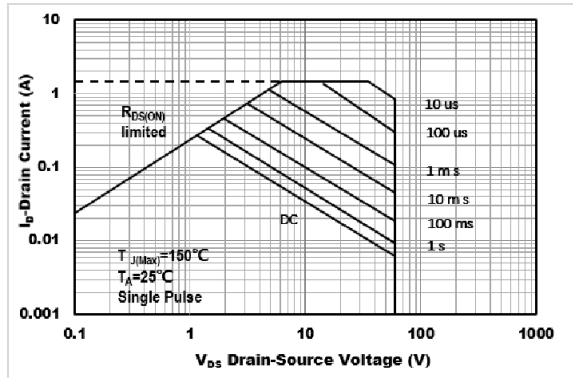


Drain-Source on Resistance

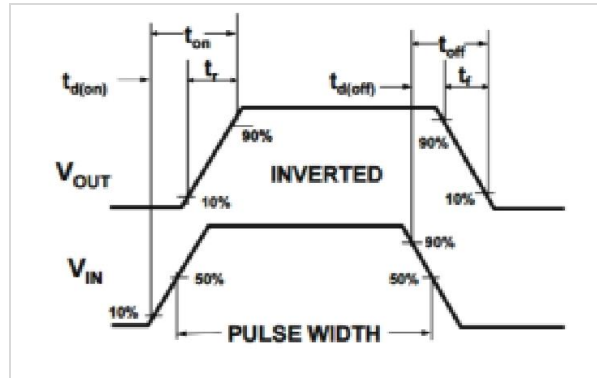


7. Typical Characteristics (cont.)

Safe Operation Area

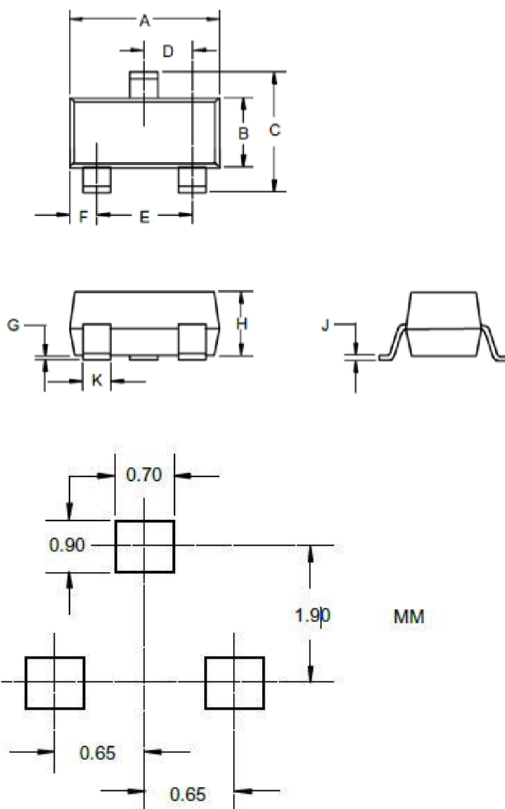


Switching wave



8. Package Dimensions

SOT323



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.071	.087	1.80	2.20	
B	.045	.053	1.15	1.35	
C	.083	.096	2.10	2.45	
D	.026 Nominal		0.65 Nominal		
E	.047	.055	1.20	1.40	
F	.012	.016	.30	.40	
G	.000	.004	.000	.100	
H	.035	.039	.90	1.00	
J	.004	.010	.100	.250	
K	.006	.016	.15	.40	