



Description

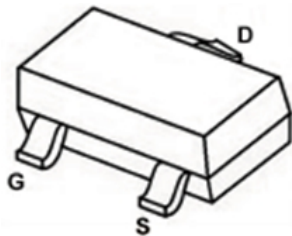
JMT N-channel MOSFET

Features

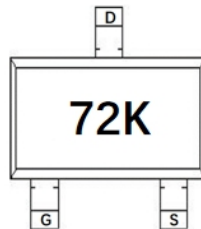
- $V_{DS}=60V$, $I_D=0.2A$
 $R_{DS(ON)} < 2.1\Omega @ V_{GS} = 10V$
 $R_{DS(ON)} < 2.7\Omega @ V_{GS} = 4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired
- ESD Protected: 2KV

Application

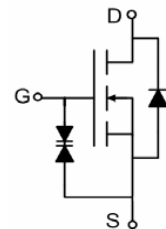
- Battery Operated Systems
- Direct logic-level Interface: TTL/CMOS
- Solid-State Relays



SOT-323 top view



Marking and pin Assignment



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
72K	JMTLA2N7002KS	TAPING	SOT-323	7inch	3000	180000

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise specified)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	60	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_A = 25^\circ C$	0.2
		$T_A = 100^\circ C$	0.13
I_{DM}	Pulsed Drain Current ^{note1}	0.8	A
P_D	Power Dissipation	$T_A = 25^\circ C$	0.14
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	893	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$



Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = 10μA	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} = 0V,	-	-	1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±10	uA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1	-	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note2</small>	V _{GS} =10V, I _D =0.3A	-	1.6	2.1	Ω
		V _{GS} =4.5V, I _D =0.2A	-	1.9	2.7	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz	-	28	-	pF
C _{oss}	Output Capacitance		-	11	-	pF
C _{rss}	Reverse Transfer Capacitance		-	4	-	pF
Q _g	Total Gate Charge	V _{DS} = 10V, I _D = 0.3A, V _{GS} = 4.5V	-	1.7	-	nC
Q _{gs}	Gate-Source Charge		-	0.3	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	0.6	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = 30V, I _D =0.2A, R _{GEN} = 10Ω, V _{GS} =10V,	-	10	-	ns
t _r	Turn-on Rise Time		-	50	-	ns
t _{d(off)}	Turn-off Delay Time		-	17	-	ns
t _f	Turn-off Fall Time		-	10	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	0.2	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	0.8	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S =0.2A	-	-	1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%



Typical Performance Characteristics

Figure 1: Output Characteristics

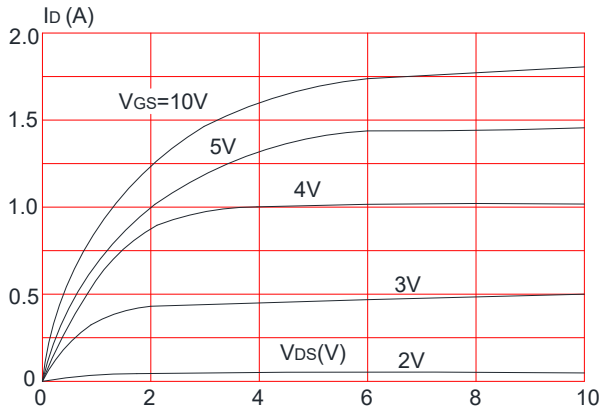


Figure 2: Typical Transfer Characteristics

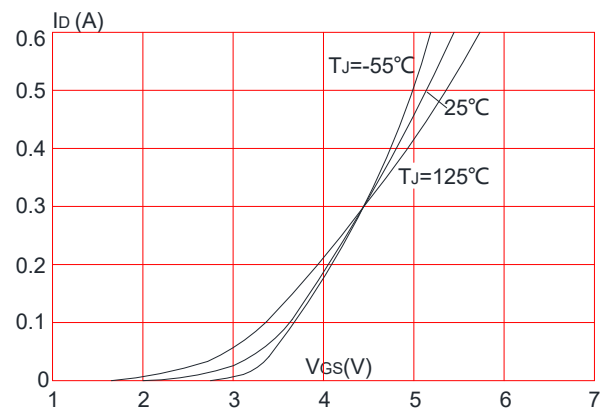


Figure 3: On-resistance vs. Drain Current

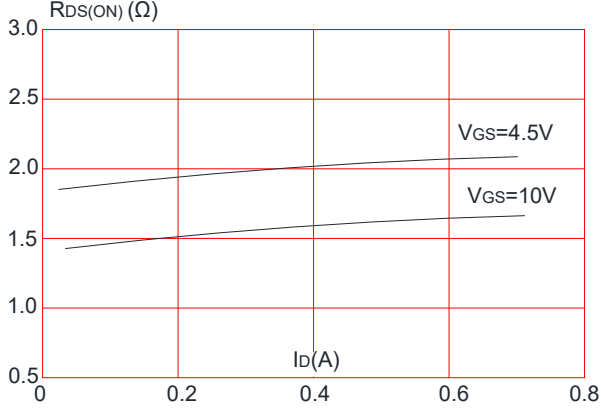


Figure 4: Body Diode Characteristics

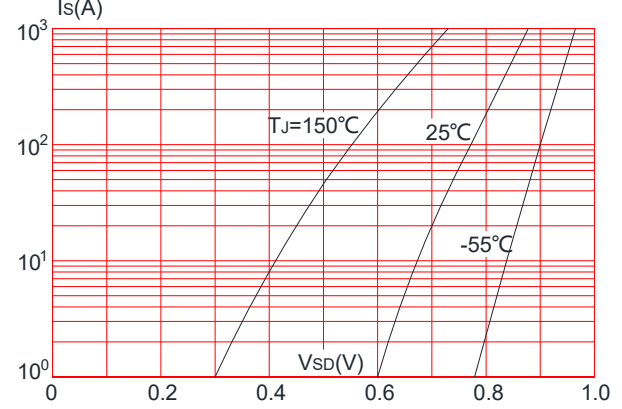


Figure 5: Gate Charge Characteristics

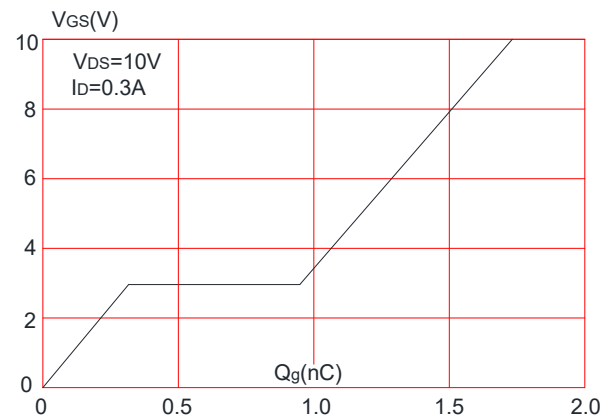


Figure 6: Capacitance Characteristics

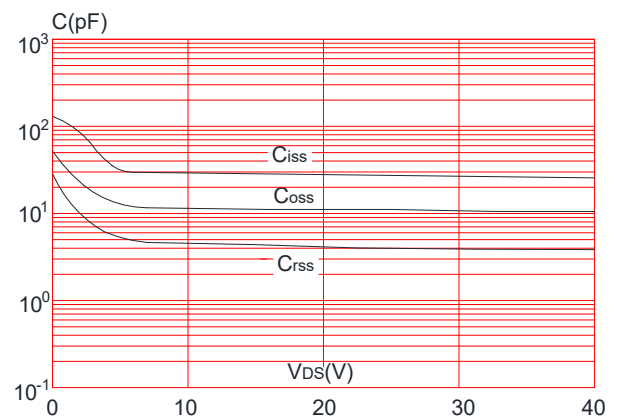




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

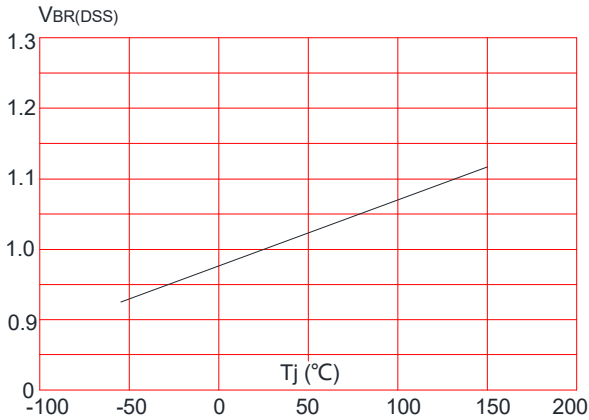


Figure 8: Normalized on Resistance vs. Junction Temperature

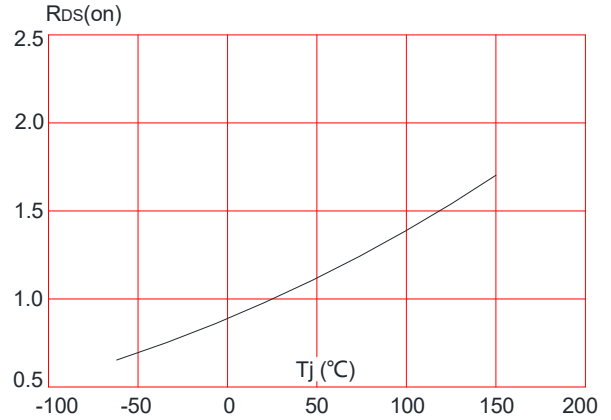


Figure 9: Maximum Safe Operating Area

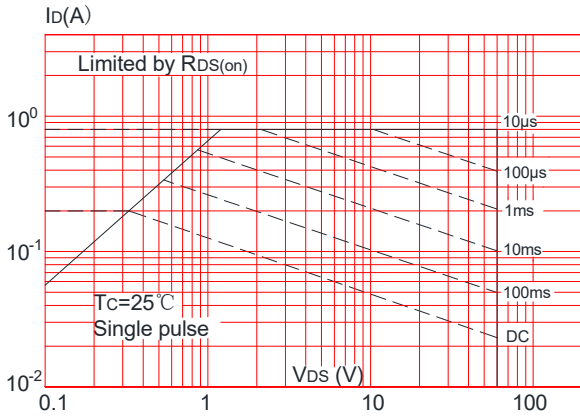


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

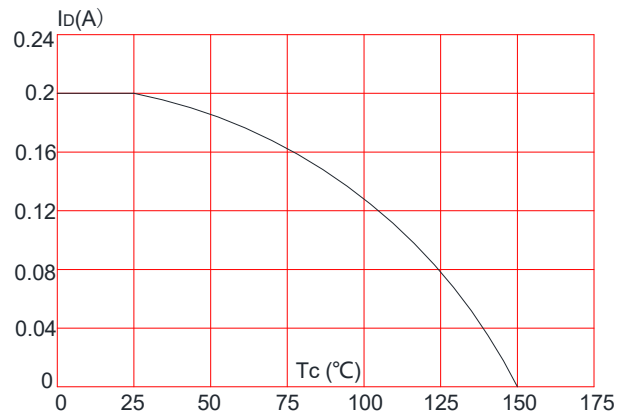
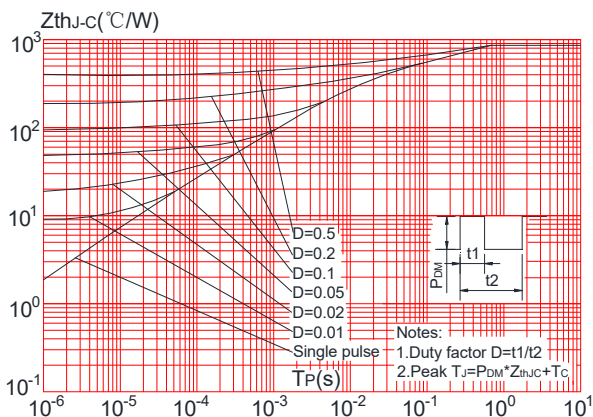


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

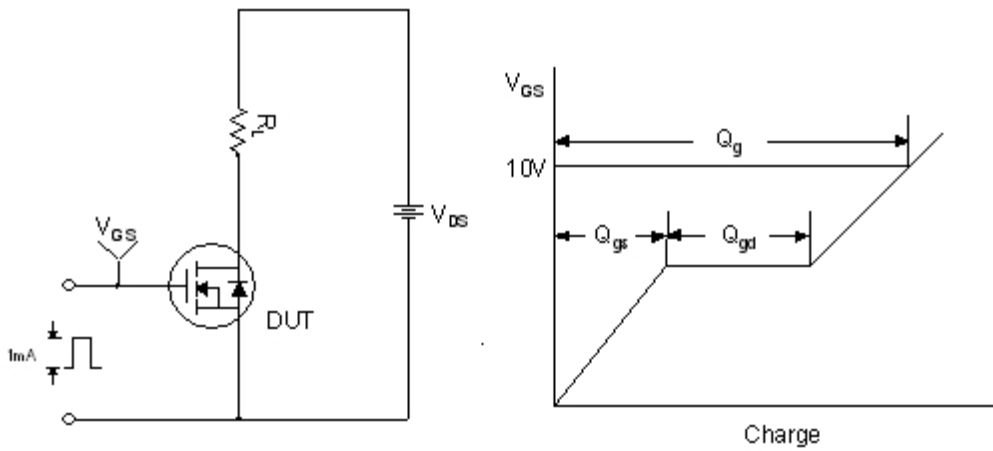


Figure 1. Gate Charge Test Circuit & Waveform

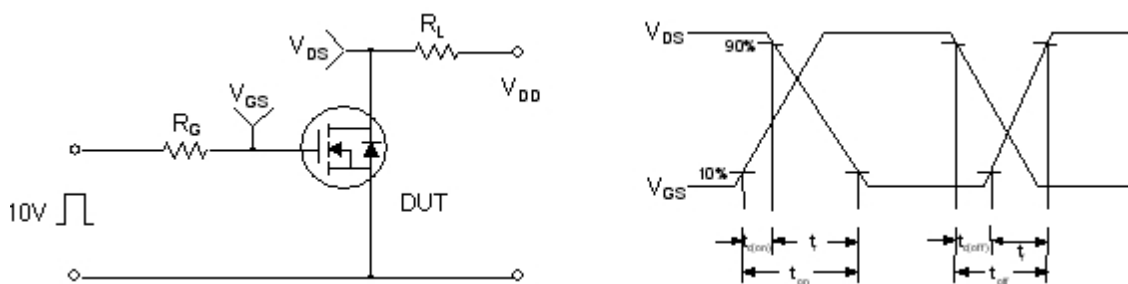


Figure 2. Resistive Switching Test Circuit & Waveforms

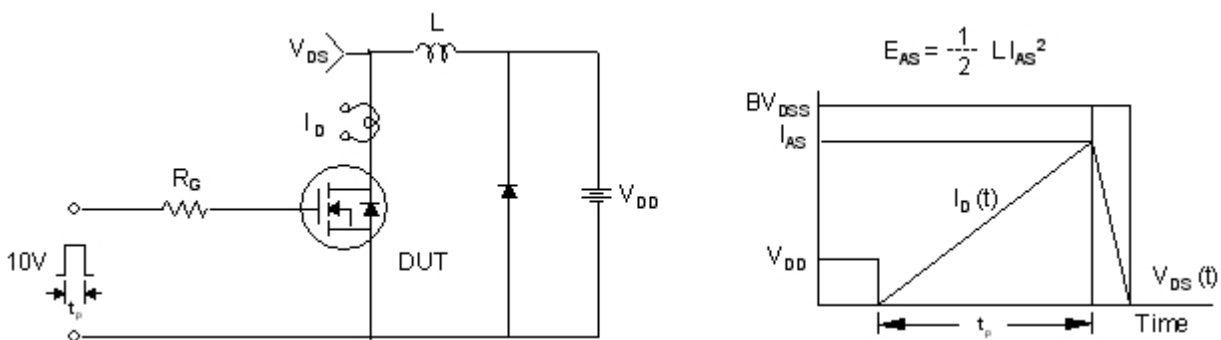
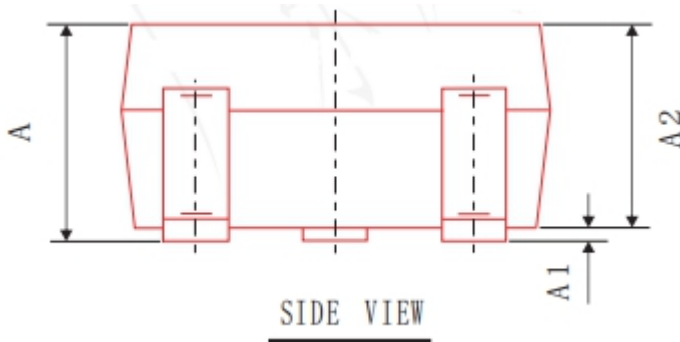
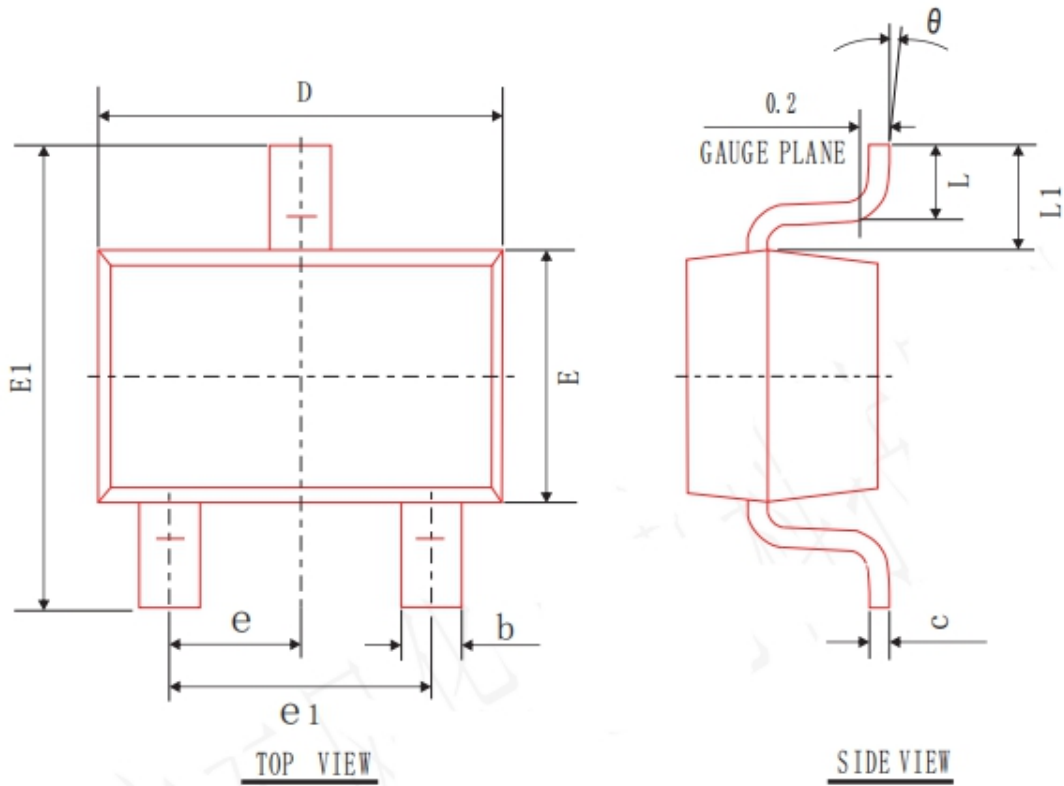


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms



Package Mechanical Data-SOT-323



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)


SYMBOL	MIN	NOM	MAX
A	0.90	1.00	1.10
A1	0.00	0.05	0.10
A2	0.90	0.95	1.00
b	0.20	0.25	0.30
c	0.08	0.10	0.15
e1	1.20	1.30	1.40
D	2.00	2.10	2.20
E	1.15	1.25	1.35
E1	2.15	2.30	2.45
L	0.26	0.36	0.46
θ	0°	4°	8°
L1	0.525 REF		
e	0.65 TYP		



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