

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	2.5Ω@10V	0.3A
	3Ω@4.5V	

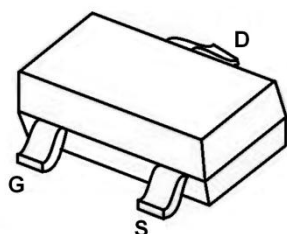
Feature

- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- Low input Capacitance
- Fast Switching Speed
- Low Input / Output Leakage
- Suffix "-Q1" for AEC-Q101

Application

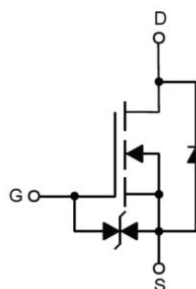
- Battery operated systems
- Solid-state relays
- Direct logic-level interface: TTL/CMOS

Package

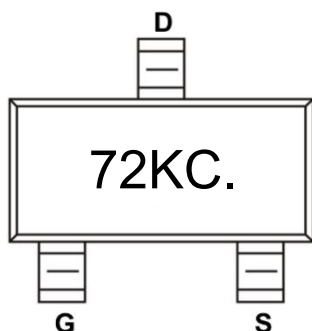


SOT-323

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	0.3	A
Continuous Drain Current ($T_A=70^{\circ}\text{C}$)	$I_D(70^{\circ}\text{C})$	0.24	A
Pulsed Drain Current ¹⁾	I_{DM}	1.5	A
Power Dissipation	P_D	0.3	W
Thermal Resistance Junction to Ambient ²⁾	$R_{\theta JA}$	416	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static characteristics						
Drain-Source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Zero Gate voltage drain current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 10	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.5	V
Drain-Source on-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=0.3A$		1.9	2.5	Ω
		$V_{GS}=4.5V, I_D=0.2A$		2	3	
Dynamic characteristics ³⁾						
Input capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, f=1MHz$		27		pF
Output capacitance	C_{oss}			3		
Reverse transfer capacitance	C_{rss}			2		
Total Gate Charge	Q_g	$V_{DS}=30V, V_{GS}=10V, I_D=0.3A$		1.65		nC
Turn-on delay time	$t_{d(on)}$	$V_{DS}=30V, V_{GS}=10V, I_D=0.3A$ $R_G=6\Omega$		6.5		nS
Turn-off delay time	$t_{d(off)}$			9.6		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				0.3	A
Diode forward voltage	V_{SD}	$V_{GS}=0V, I_S=0.3A$			1.2	V
Reverse recovery time	T_{rr}	$V_{GS}=0V, V_R=25V, I_S=0.3A$ $di/dt=100A/\mu s$		24		nS

Notes:

- 1) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
- 2) Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.
- 3) Guaranteed by design, not subject to production testing.

Typical Characteristics

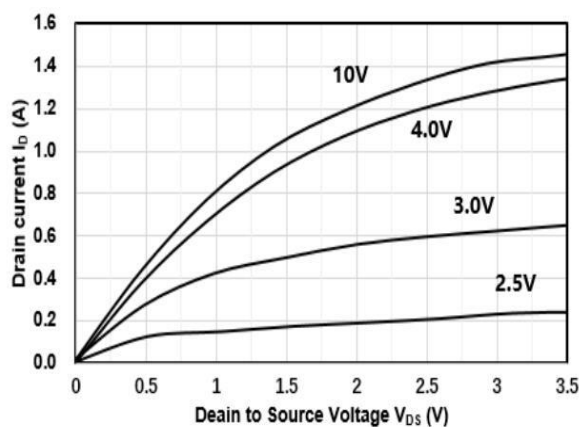


Figure1. Output Characteristics

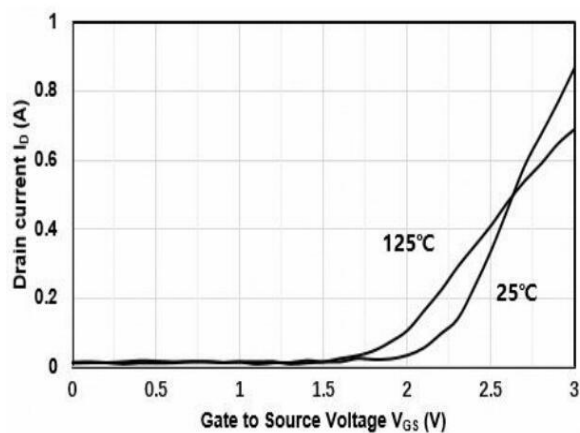


Figure2. Transfer Characteristics

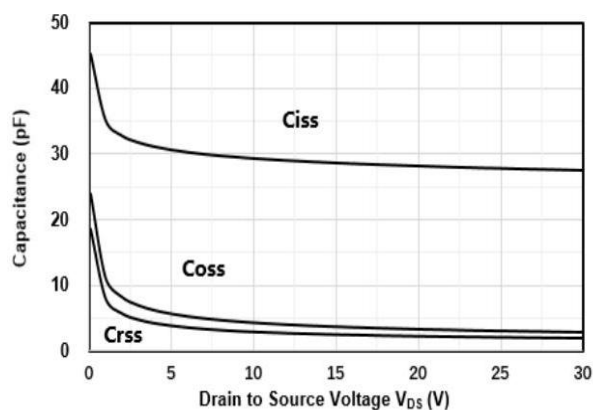


Figure3. Capacitance Characteristics

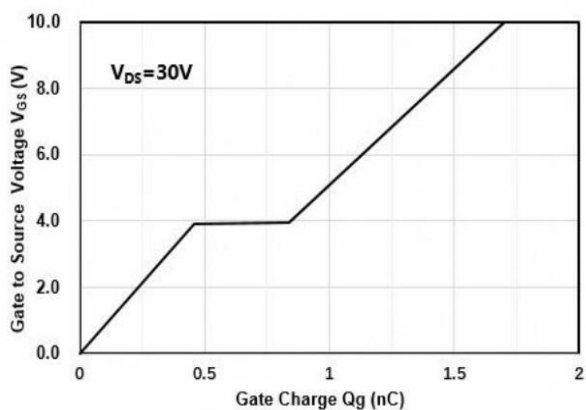


Figure4. Gate Charge

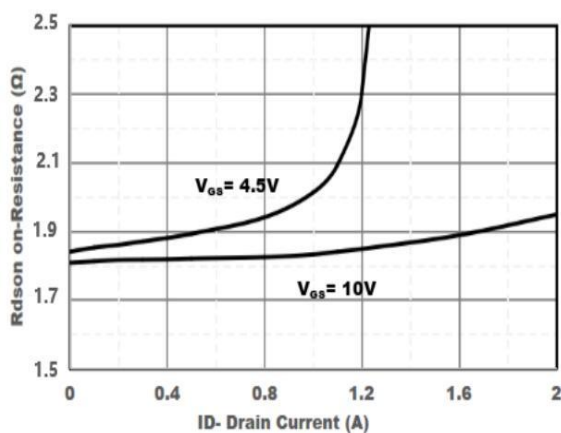


Figure5. Drain-Source on Resistance

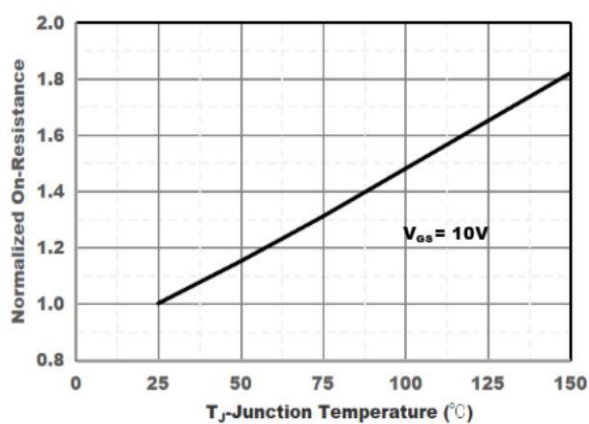


Figure6. Drain-Source on Resistance

Typical Characteristics

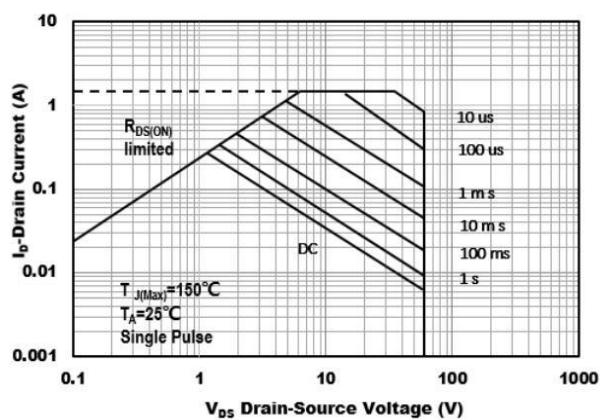


Figure7. Safe Operation Area

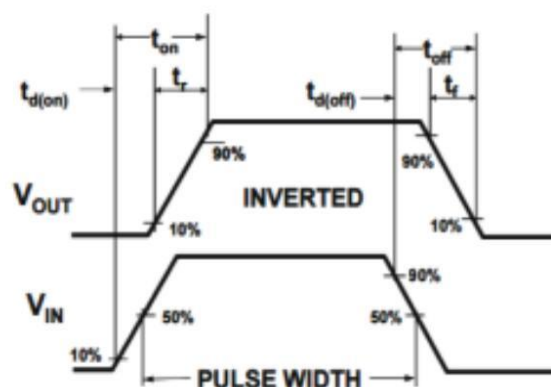
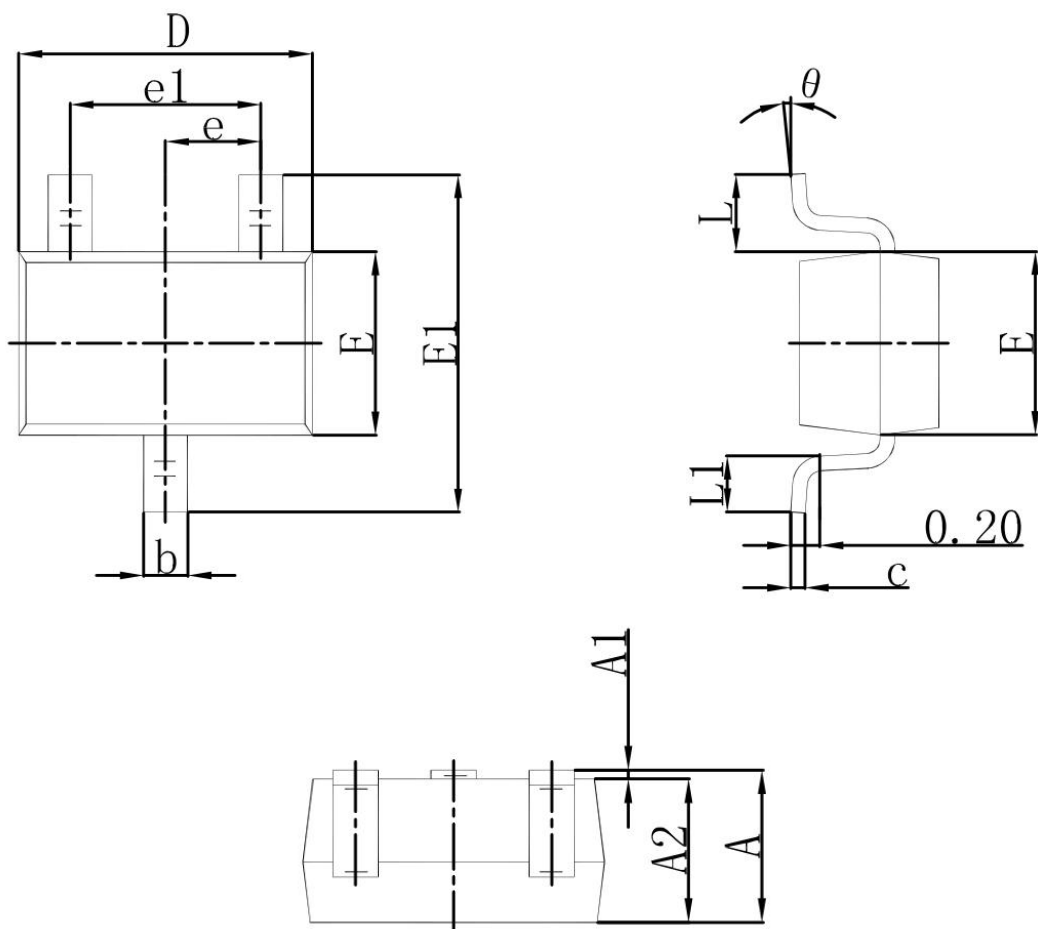


Figure8. Switching wave

SOT-323 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.400	0.006	0.016
c	0.100	0.250	0.004	0.010
D	1.800	2.200	0.071	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°