

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	2.5Ω@10V	0.3A
	3.0Ω@4.5V	

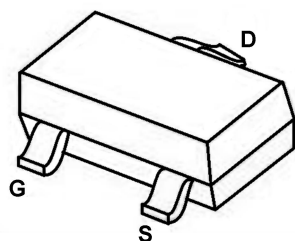
Feature

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

Application

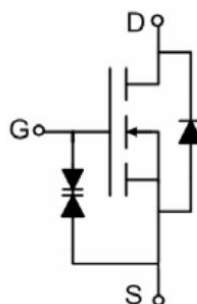
- Battery operated systems
- Solid-state relays
- Direct logic-level interface: TTL/CMOS

Package

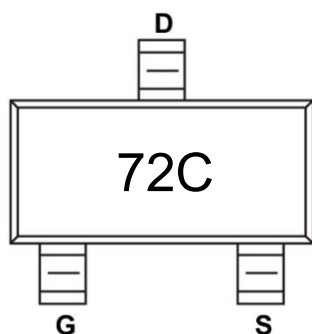


SOT-523

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	0.24	A
Pulsed Drain Current ¹⁾	I_{DM}	1.5	A
Power Dissipation	P_D	0.3	W
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	416	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +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}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 10	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.5	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 0.3A$		1.9	2.5	Ω
		$V_{GS} = 4.5V, I_D = 0.2A$		2.0	3.0	
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	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 0.3A, R_{GEN} = 6\Omega$		6.5		nS
Turn-off delay time	$t_{d(off)}$			9.6		
Reverse recovery Time	t_{rr}	$V_{GS} = 0V, I_S = 300mA, V_R = 25V, di/dt = -100A/\mu s$		24		nS
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 0.3A$			1.2	V
Body-Diode Continuous Current	I_S				0.3	A

Notes:

- 1) Pulse Test: Pulse Width < 300 μs , 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

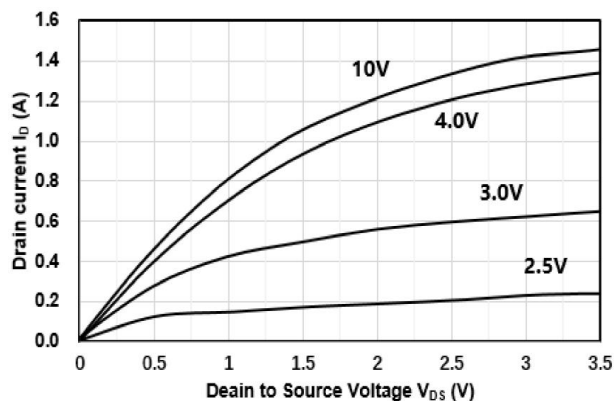


Figure1. Output Characteristics

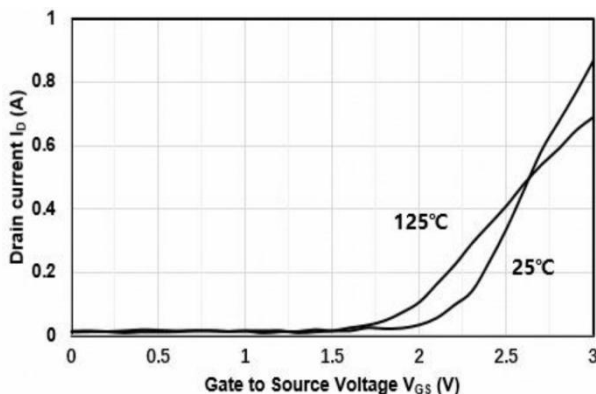


Figure2. Transfer Characteristics

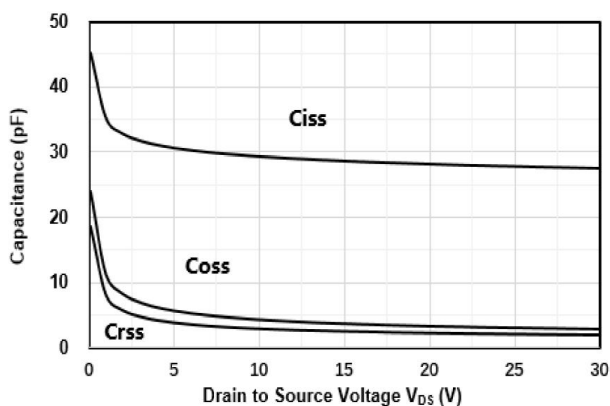


Figure3. Capacitance Characteristics

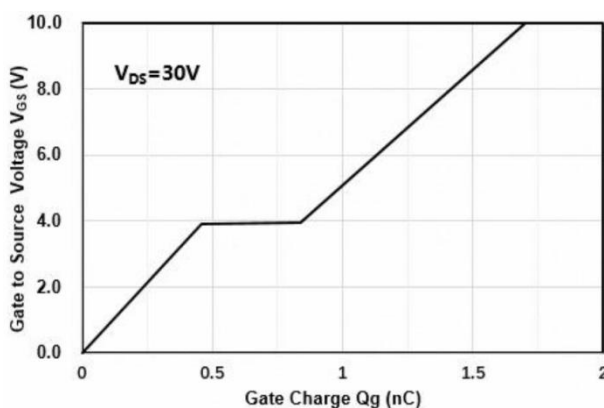


Figure4. Gate Charge

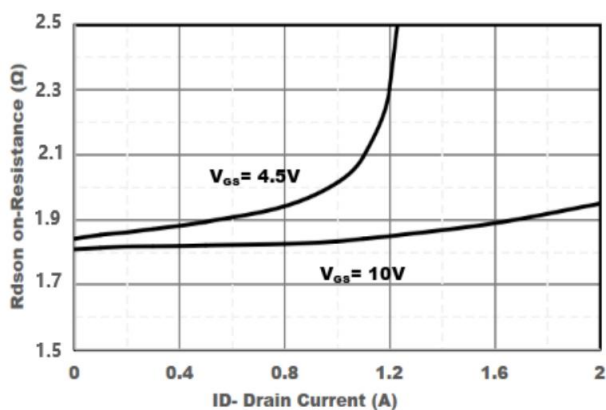


Figure5. Drain-Source on Resistance

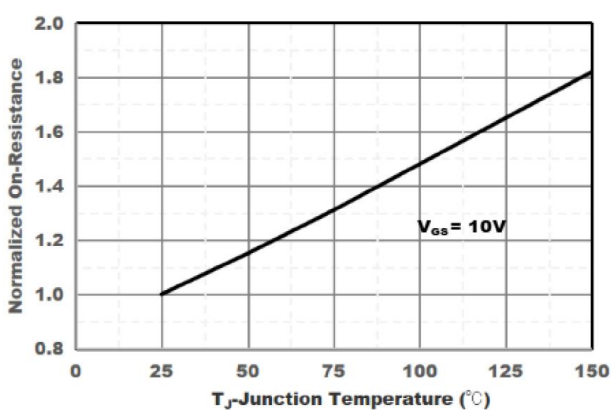


Figure6. Drain-Source on Resistance

Typical Characteristics

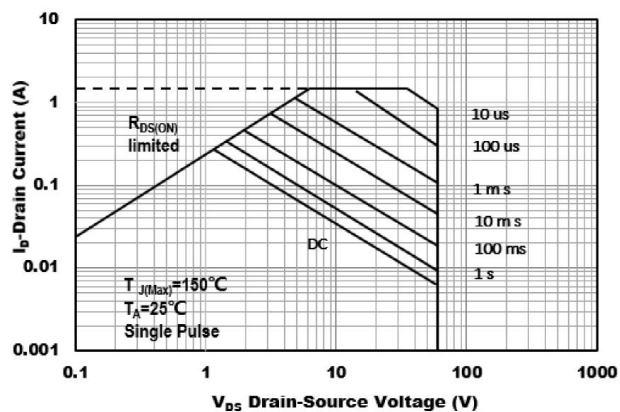


Figure7. Safe Operation Area

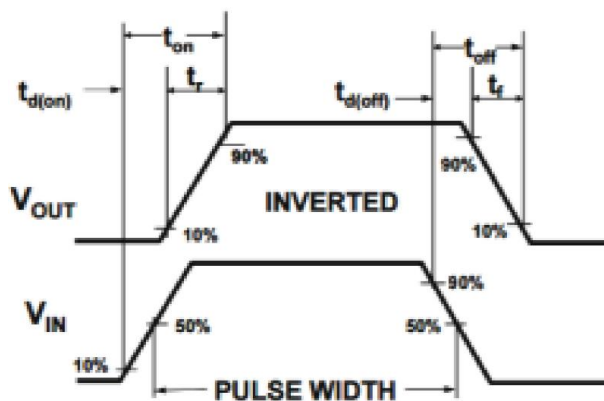
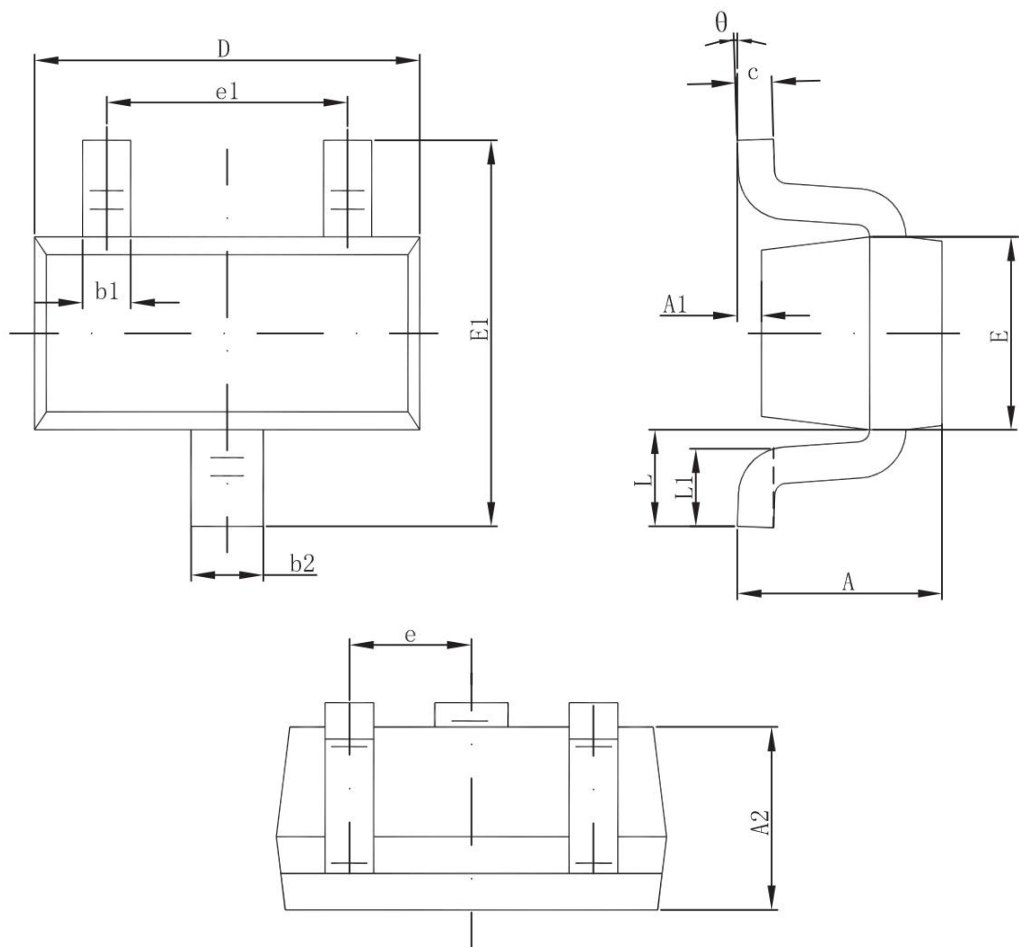


Figure8. Switching wave

SOT-523 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.600	0.800	0.024	0.031
b1	0.150	0.350	0.006	0.014
b2	0.250	0.450	0.010	0.018
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°