

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
50V	2.5Ω@10V	0.34A
	3Ω@4.5V	

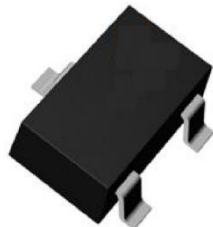
Feature

- 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

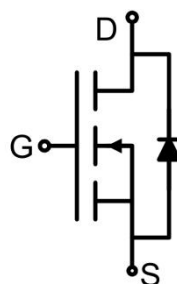
- Battery operated systems
- Solid-state relays
- Direct logic-level interface :TTL / CMOS

Package

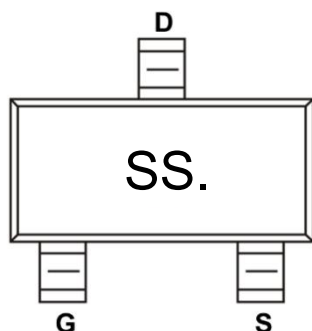


SOT-23

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	0.34	A
Continuous Drain Current ($T_A=70^{\circ}\text{C}$)	$I_D (70^{\circ}\text{C})$	0.272	A
Pulsed Drain Current ¹⁾	I_{DM}	1.5	A
Power Dissipation	P_D	0.35	W
Thermal Resistance Junction-to-Ambient ²⁾	$R_{\theta JA}$	357	$^{\circ}\text{C/W}$
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 =250μA	50			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =50V, V _{GS} =0V			0.5	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.8	1.2	1.6	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.3A		1.1	2.5	Ω
		V _{GS} =4.5V, I _D =0.2A		1.2	3	
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		28.5		pF
Output Capacitance	C _{oss}			2.7		
Reverse Transfer Capacitance	C _{rss}			1.78		
Total Gate Charge	Q _g	V _{DS} =25V, V _{GS} =10V, I _D =0.3A		1.7		nC
Gate-Source Charge	Q _{gs}			0.4		
Gate-Drain Charge	Q _{gd}			0.24		
Turn-on delay time	t _{d(on)}	V _{DS} =25V, V _{GS} =10V, I _D =0.3A R _G =6Ω		2.6		nS
Turn-on rise time	t _r			18.8		
Turn-off delay time	t _{d(off)}			9.7		
Turn-off fall time	t _f			47		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				0.34	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =0.3A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =0.3A, di/dt =-100A/us		12.2		nS
Reverse Recovery Charge	Q _{rr}			2.65		nC

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

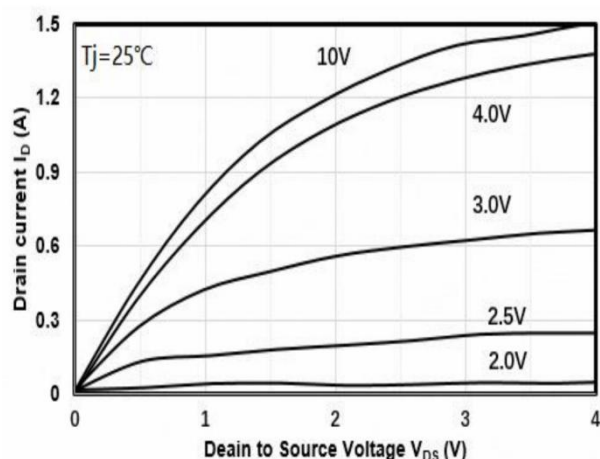


Figure1. Output Characteristics

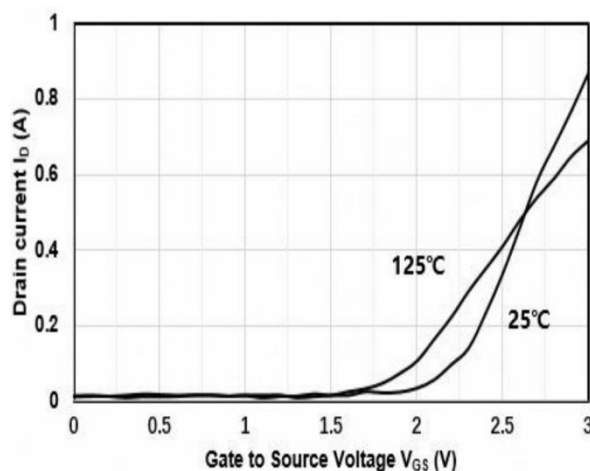


Figure2. Transfer Characteristics

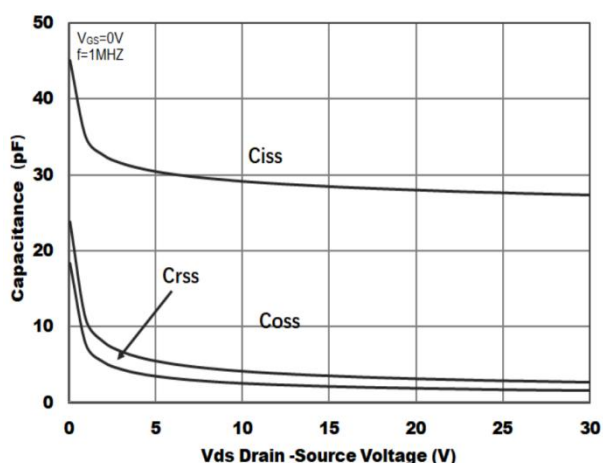


Figure3. Capacitance Characteristics

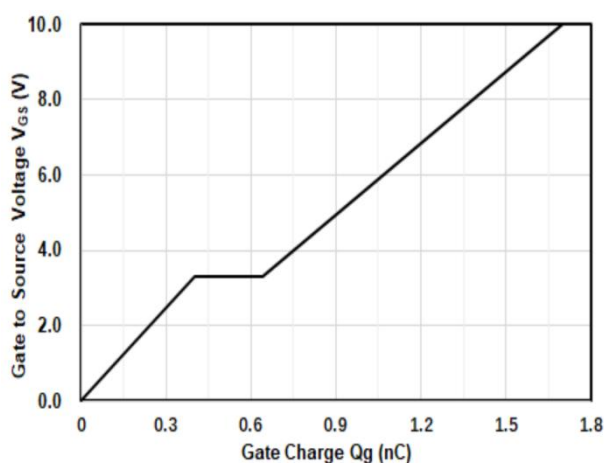


Figure4. Gate Charge

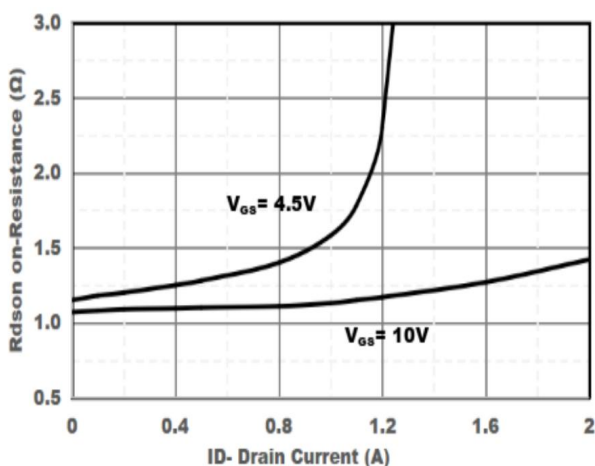


Figure5. Drain-Source on Resistance

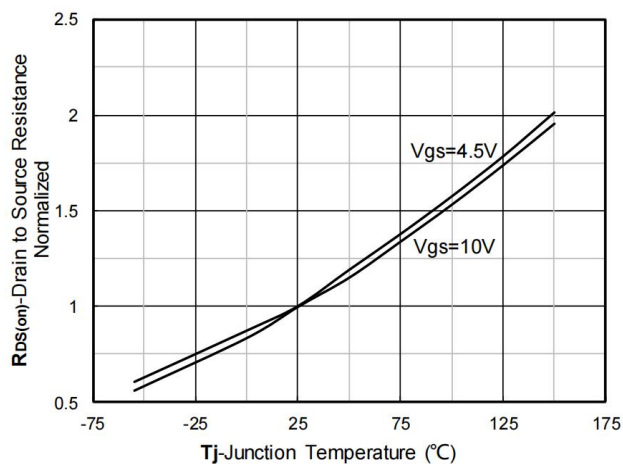


Figure6. Drain-Source on Resistance

Typical Characteristics

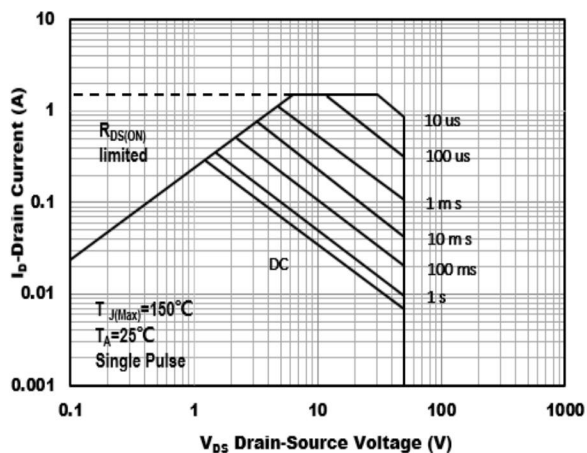


Figure7. Safe Operation Area

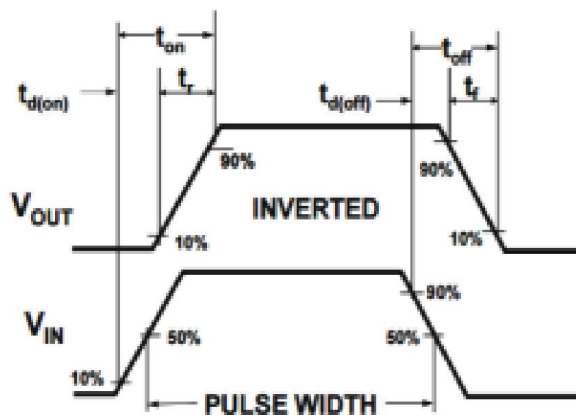


Figure8. Switching wave

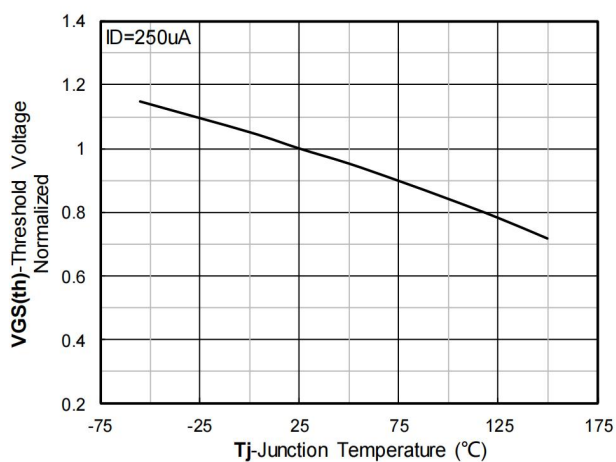


Figure 9. Normalized Threshold voltage

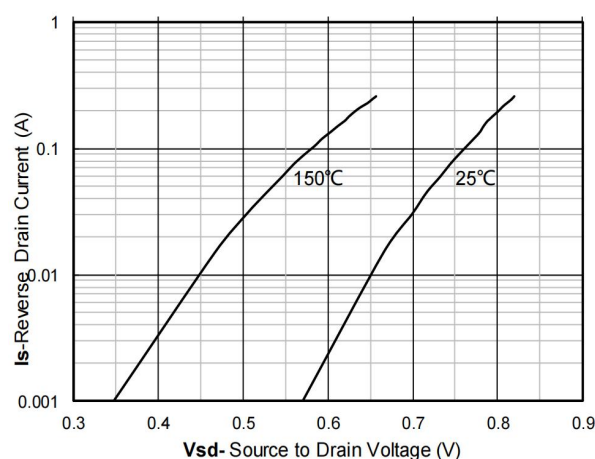
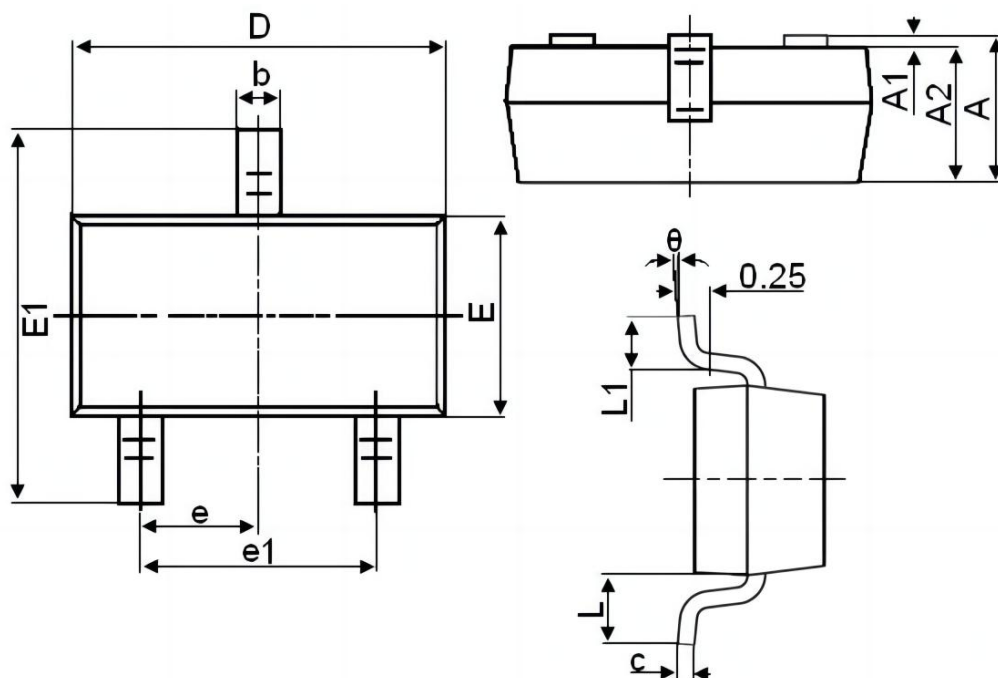


Figure 10. Forward characteristics of reverse diode

SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.200	0.003	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 REF.		0.037 REF.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°