

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	1.5Ω@10V	0.6A
	1.8Ω@4.5V	

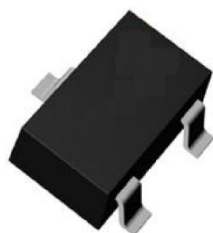
Feature

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

Application

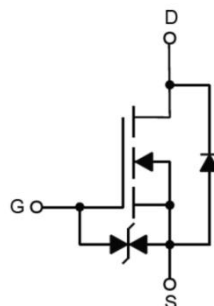
- Battery operated systems
- Solid-state relays
- Direct logic-level interface: TTL/CMOS

Package

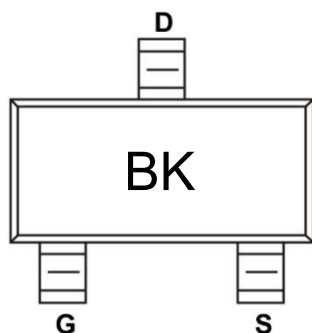


SOT-23

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	0.6	A
Pulsed Drain Current ¹⁾	I_{DM}	1.5	A
Power Dissipation ²⁾	P_D	0.8	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	150	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	1.1	1.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 0.6A$		1.1	1.5	Ω
		$V_{GS} = 4.5V, I_D = 0.2A$		1.25	1.8	
Dynamic characteristics ³⁾						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$		25		pF
Output Capacitance	C_{oss}			7		
Reverse Transfer Capacitance	C_{rss}			3		
Total Gate Charge	Q_g	$V_{GS} = 10V, V_{DS} = 30V, I_D = 1A$		1.4		nC
Gate-Source Charge	Q_{gs}			0.5		
Gate-Drain Charge	Q_{gd}			0.2		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 1A, R_{GEN} = 2.3\Omega$		4		nS
Turn-on rise time	t_r			19		
Turn-off delay time	$t_{d(off)}$			9		
Turn-off fall time	t_f			25		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				0.6	A
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 0.6A$			1.3	V

Notes:

- 1) Repetitive rating; pulse width limited by max. junction temperature.
- 2) P_D is based on max. junction temperature, using junction-case thermal resistance.
- 3) Guaranteed by design, not subject to production testing.

Typical Characteristics

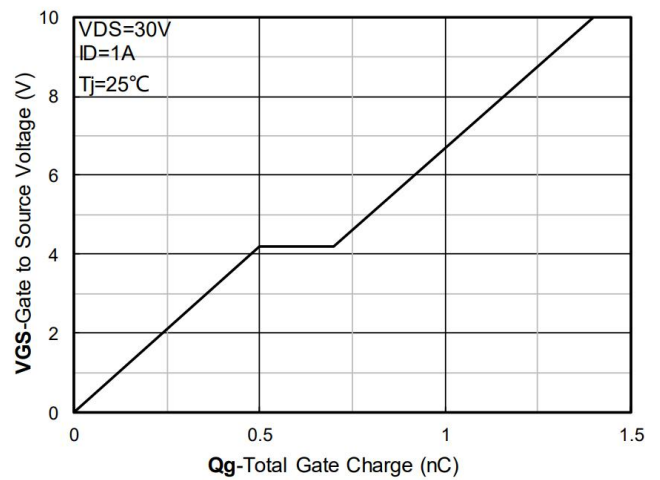
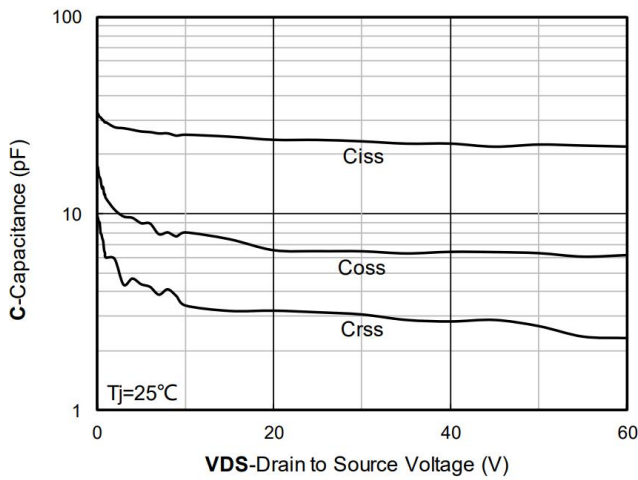
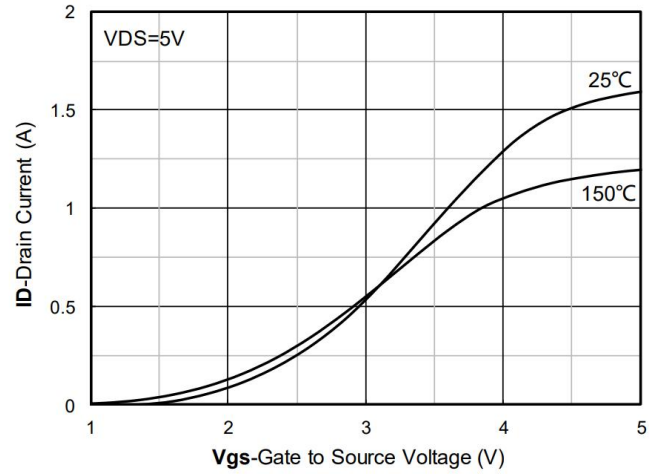
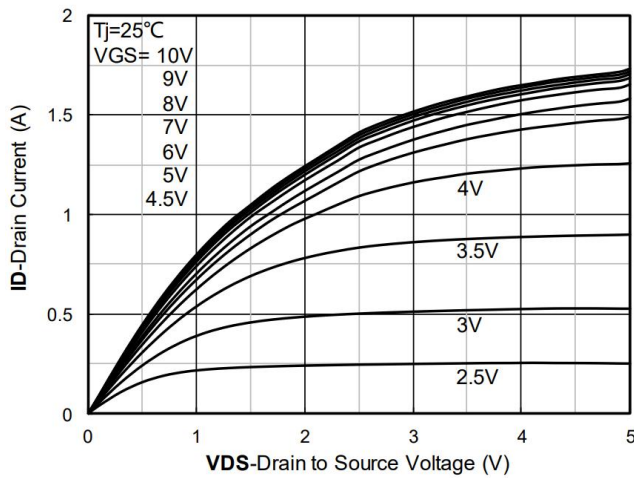


Figure 3. Capacitance Characteristics

Figure 4. Gate Charge

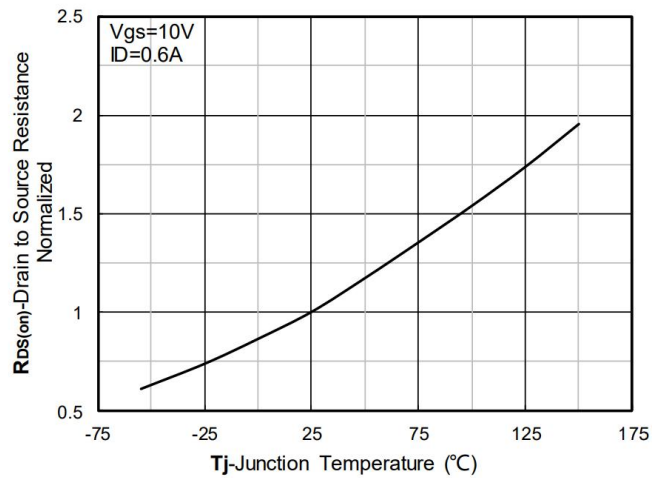
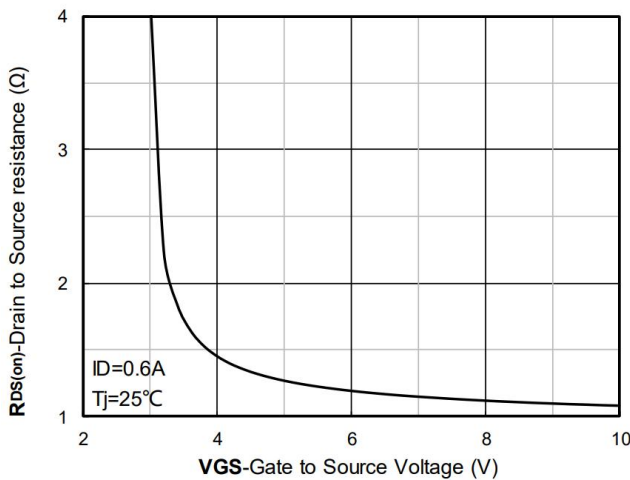


Figure 5. On-Resistance vs Gate to Source Voltage

Figure 6. Normalized On-Resistance

Typical Characteristics

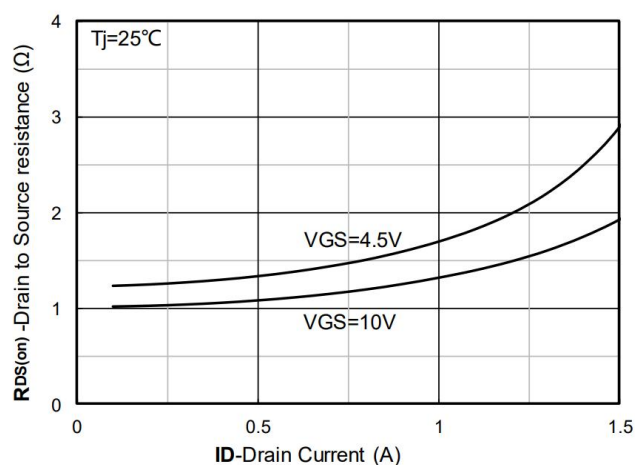


Figure 7. $R_{DS(on)}$ VS Drain Current

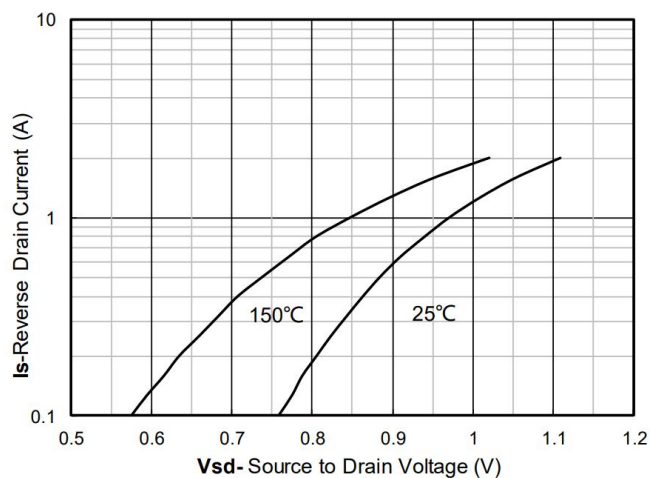


Figure 8. Forward characteristics of reverse diode

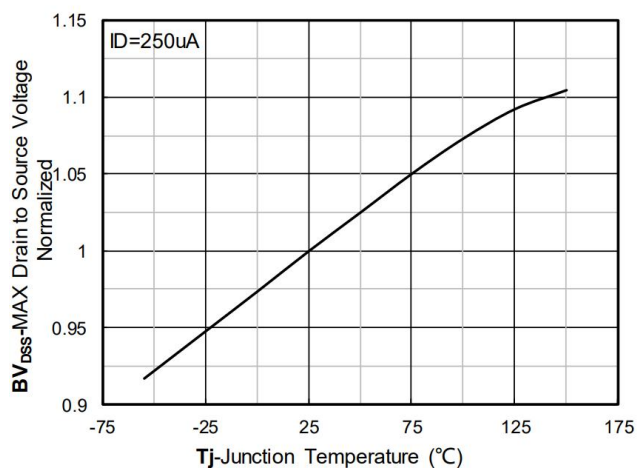


Figure 9. Normalized breakdown voltage

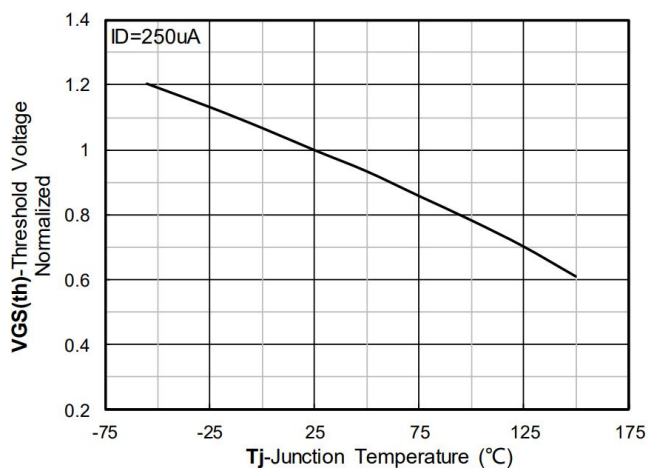


Figure 10. Normalized Threshold voltage

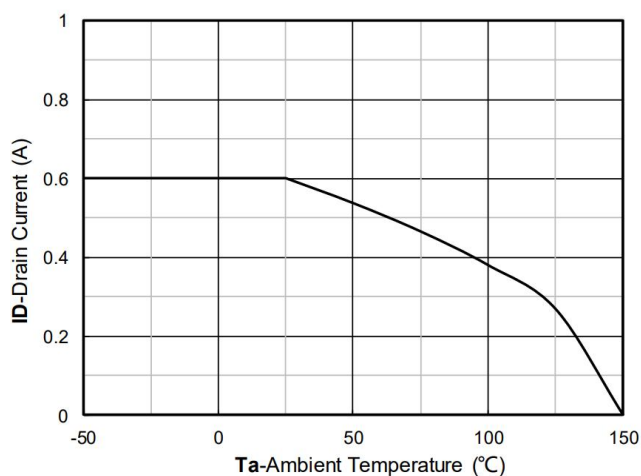


Figure 11. Current dissipation

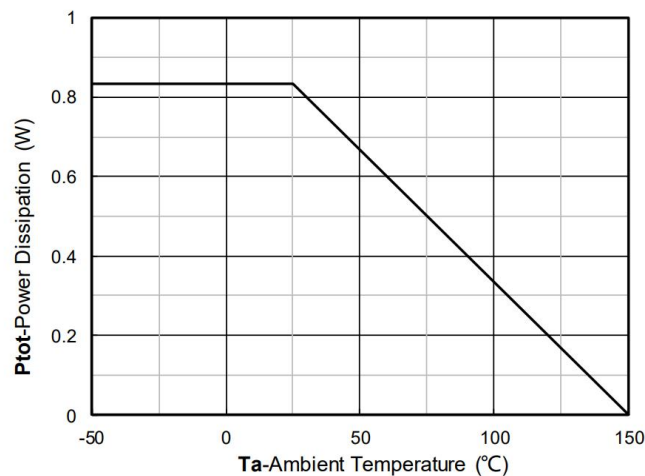


Figure 12. Power dissipation

Typical Characteristics

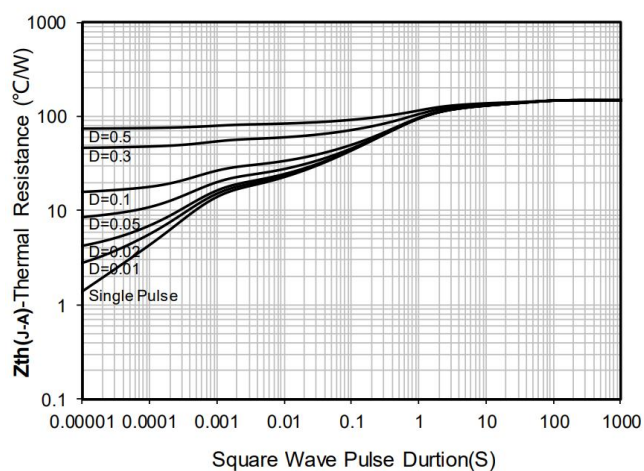


Figure 13. Maximum Transient Thermal Impedance

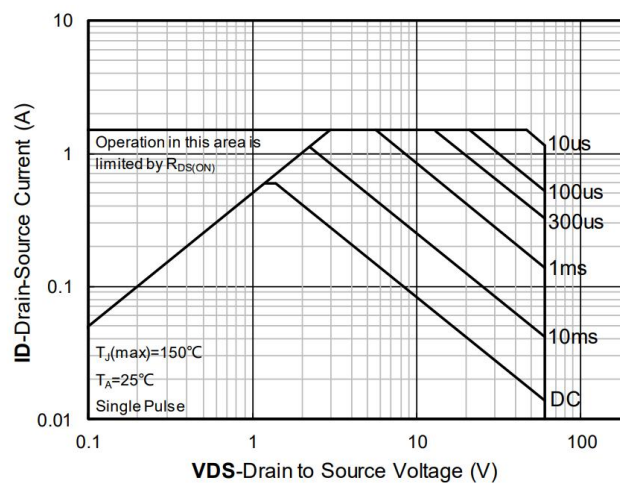
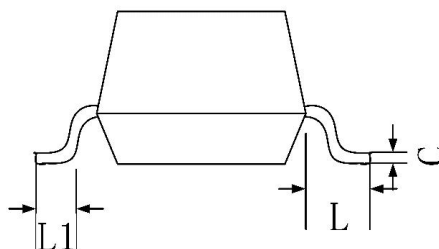
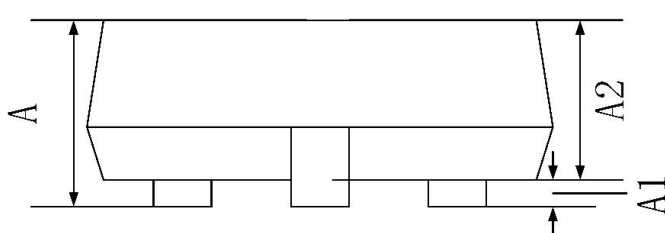
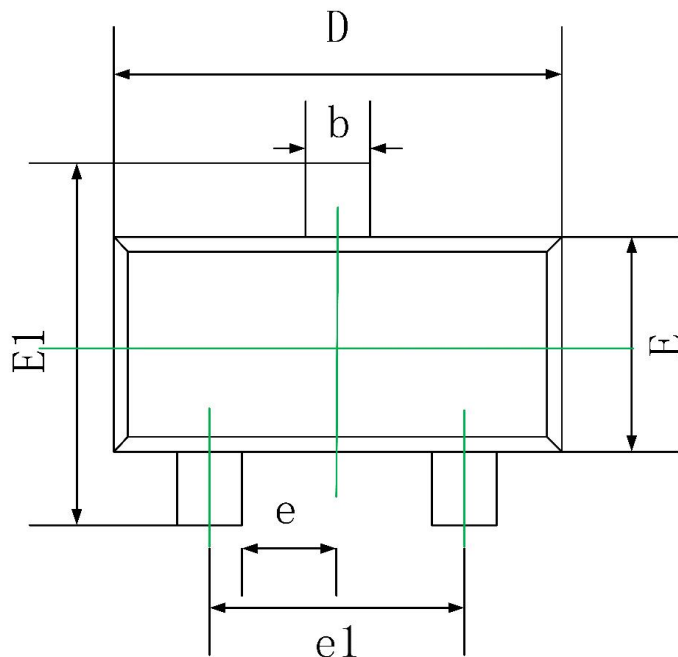


Figure 14. Safe Operation Area

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 TYP.		0.037 TYP.	
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