

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	1.2Ω@4.5V	0.4A
	1.6Ω@2.5V	
	2Ω@1.8V	
	3Ω@1.5V	
	4Ω@1.2V	

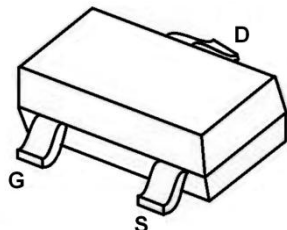
Feature

- Advanced trench cell design
- Suffix "-Q1" for AEC-Q101

Application

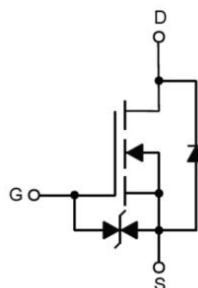
- Load switch appliances

Package

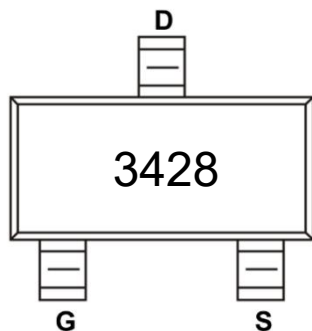


SOT-323

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current ¹⁾	I_D	0.4	A
Continuous Drain Current ¹⁾ ($T_A=70^{\circ}\text{C}$)	$I_D(70^{\circ}\text{C})$	0.32	A
Pulsed Drain Current ($t_p=10\mu\text{s}$)	I_{DM}	1.6	A
Power Dissipation ¹⁾	P_D	0.35	W
Thermal Resistance Junction to Ambient ¹⁾	$R_{\theta JA}$	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 ($T_A=25^{\circ}\text{C}$, 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	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =24V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±8V			±10	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.4		1	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =4.5V, I _D =0.3A			1.2	Ω
		V _{GS} =2.5V, I _D =0.2A			1.6	
		V _{GS} =1.8V, I _D =0.1A			2	
		V _{GS} =1.5V, I _D =0.05A			3	
		V _{GS} =1.2V, I _D =0.02A			4	
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f =1MHz		45		pF
Output Capacitance	C _{oss}			14		
Reverse Transfer Capacitance	C _{rss}			0.8		
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _D =0.3A		0.9		nC
Gate-Source Charge	Q _{gs}			0.3		
Gate-Drain Charge	Q _{gd}			0.2		
Turn-on delay time	t _{d(on)}	V _{DS} =10V, V _{GS} =4V, I _D =0.3A R _G =10Ω		8.3		nS
Turn-on rise time	t _r			5.7		
Turn-off delay time	t _{d(off)}			35		
Turn-off fall time	t _f			12		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				0.4	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =0.3A			1.3	V

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2) The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- 3) Guaranteed by design, not subject to production testing.

Typical Characteristics

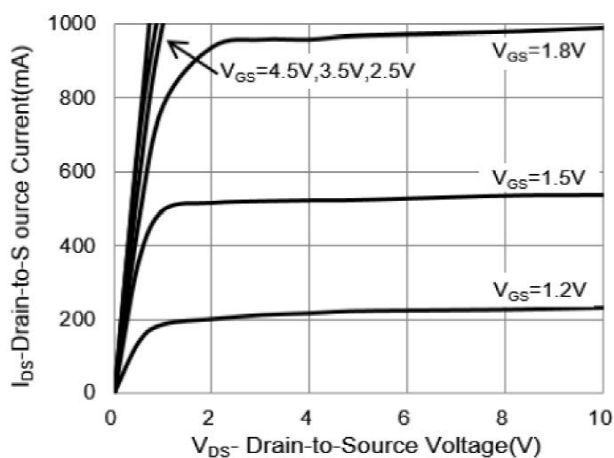


Fig 1 On-Region Characteristics

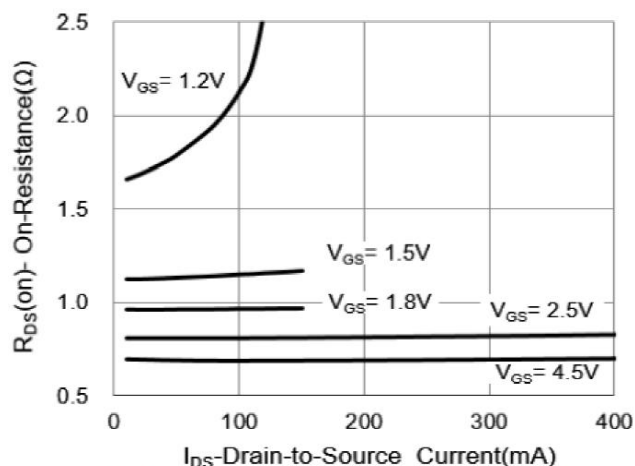


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

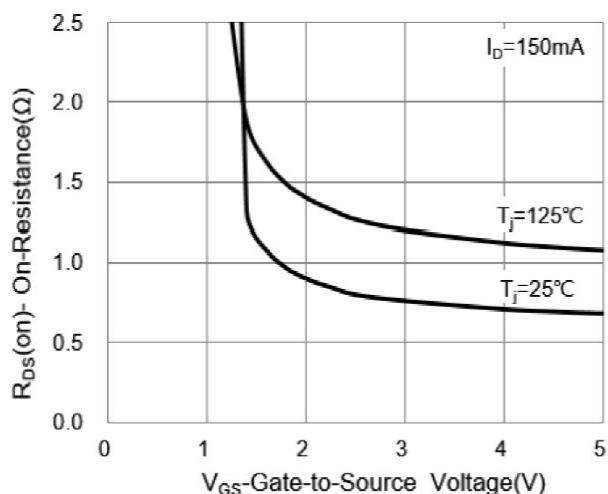


Fig 3 On-Resistance vs. Gate-Source Voltage

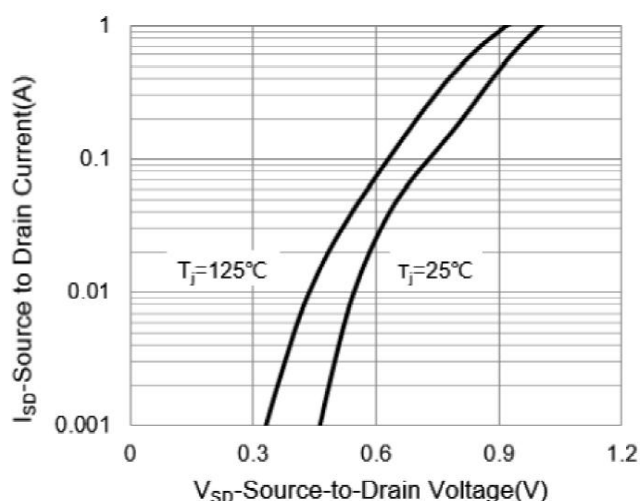


Fig 4 Body-Diode Characteristics

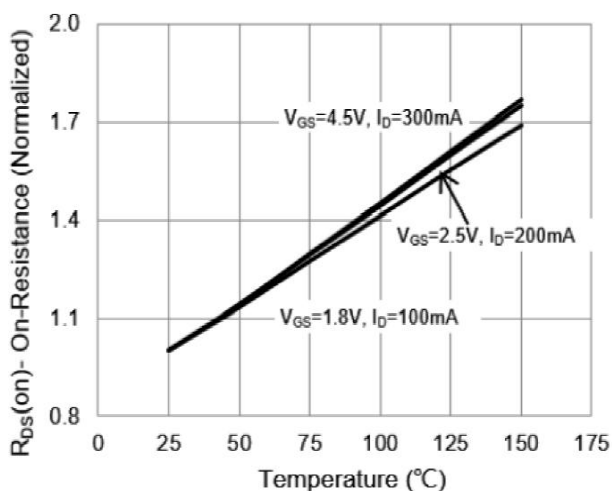


Fig 5 On-Resistance vs. Junction Temperature

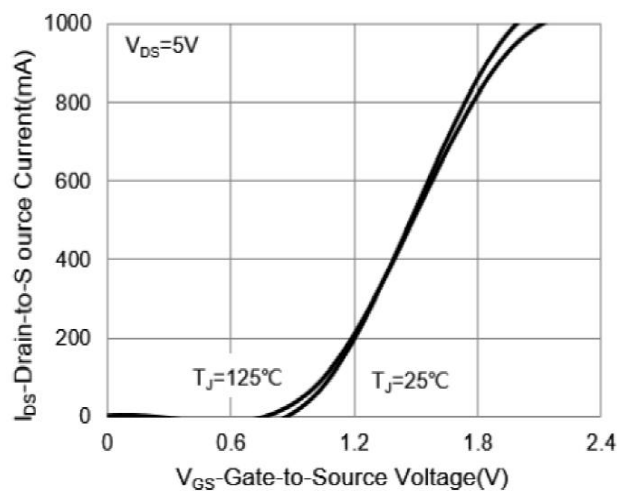


Fig 6 Transfer Characteristics

Typical Characteristics

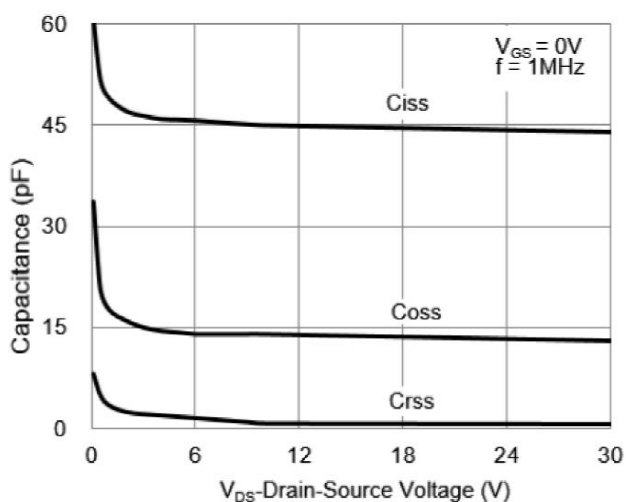


Fig 7 Capacitance Characteristics

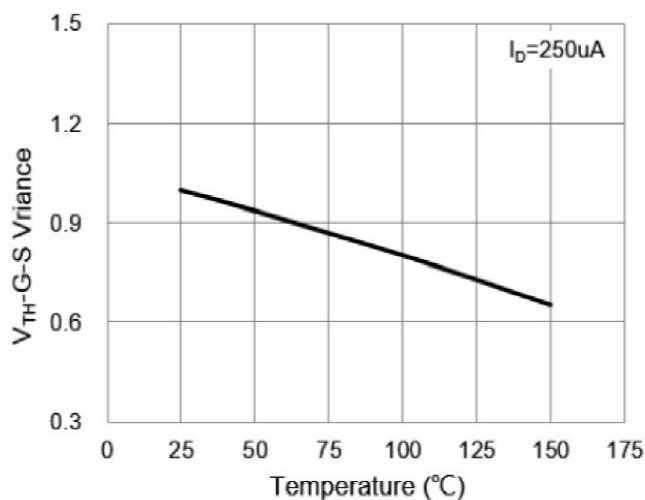


Fig 8 Gate Voltage vs. Junction Temperature

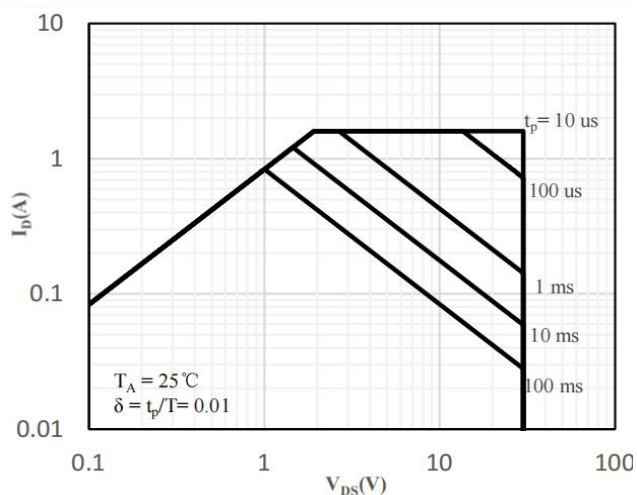


Fig 9 Safe Operation Area

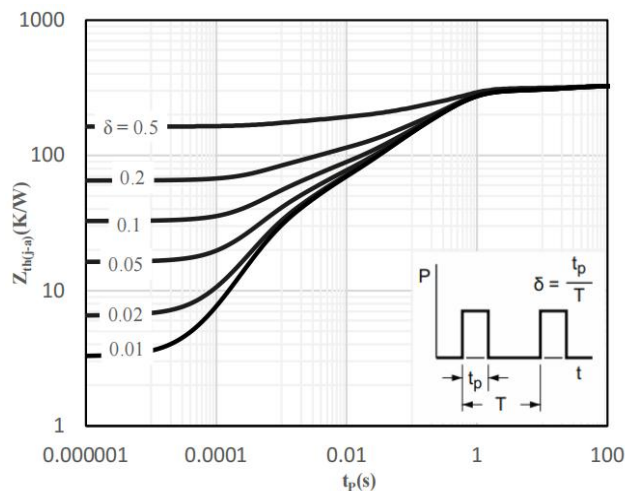
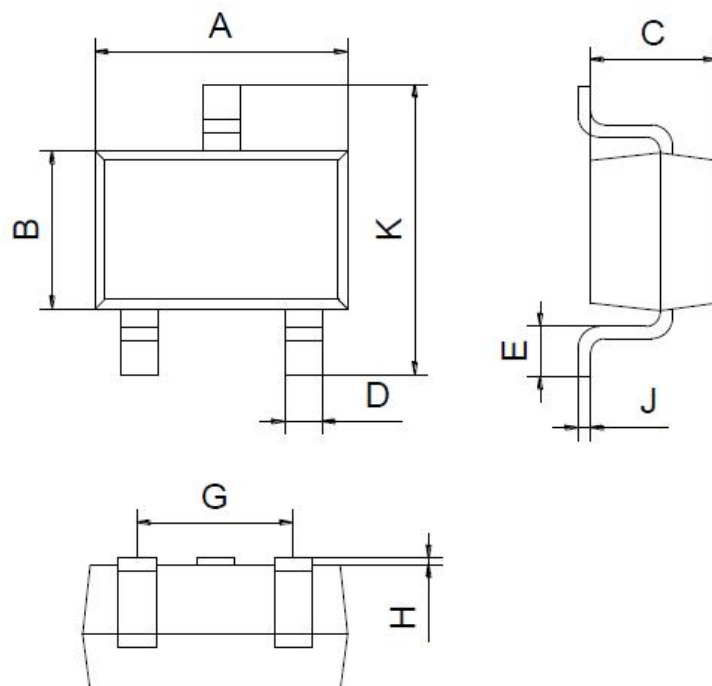


Fig 10 Maximum transient thermal impedance

SOT-323 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.000	2.200	0.079	0.087
B	1.150	1.350	0.045	0.053
C	0.900	1.100	0.035	0.043
D	0.150	0.350	0.006	0.014
E	0.250	0.400	0.010	0.016
G	1.200	1.400	0.047	0.055
H	0.020	0.100	0.001	0.004
J	0.050	0.150	0.002	0.006
K	2.200	2.400	0.087	0.094