

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	2.5Ω@-4.5V	-0.33A
	2.9Ω@-2.5V	
	5Ω@-1.8V	

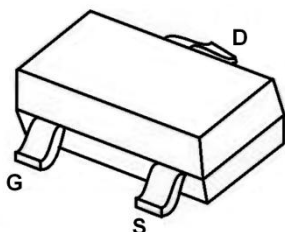
Feature

- Advanced trench technology
- Extremely low threshold voltage
- Fast switching speed
- ESD protected
- Suffix "-Q1" for AEC-Q101

Application

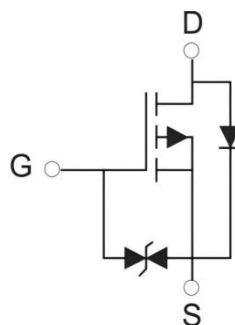
- Load switch appliances

Package

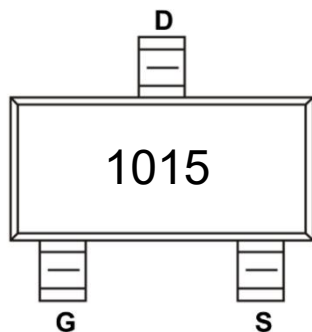


SOT-323

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	-0.33	A
Pulsed Drain Current ($t_p = 10\mu\text{s}$)	I_{DM}	-1.32	A
Power Dissipation ¹⁾	P_D	0.25	W
Thermal Resistance Junction to Ambient ¹⁾	$R_{\theta JA}$	500	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

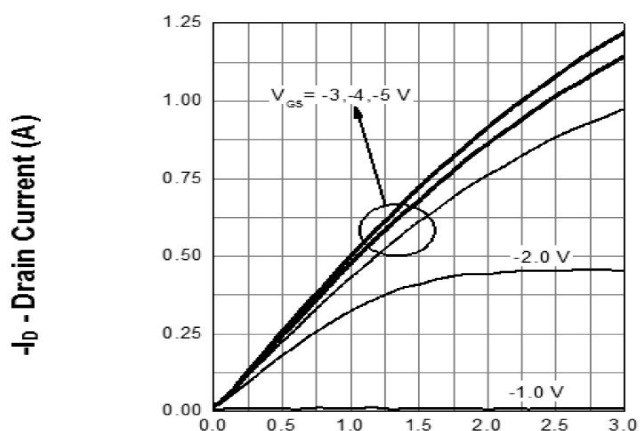
Electrical characteristics ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

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} =-30V, 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			2.5	Ω
		V _{GS} =-2.5V, I _D =-0.2A			2.9	
		V _{GS} =-1.8V, I _D =-0.1A			5	
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f =1MHz		50		pF
Output Capacitance	C _{oss}			6		
Reverse Transfer Capacitance	C _{rss}			5		
Total Gate Charge	Q _g	V _{DS} =-10V, V _{GS} =-4.5V I _D =-0.1A		1.22		nC
Gate-Source Charge	Q _{gs}			0.33		
Gate-Drain Charge	Q _{gd}			0.22		
Turn-on delay time	t _{d(on)}	V _{DS} =-10V, V _{GS} =-4.5V I _D =-0.1A, R _G =6Ω, R _L =150Ω		3.4		nS
Turn-on rise time	t _r			13		
Turn-off delay time	t _{d(off)}			37		
Turn-off fall time	t _f			23		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				-0.33	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =-0.3A			-1.3	V

Notes:

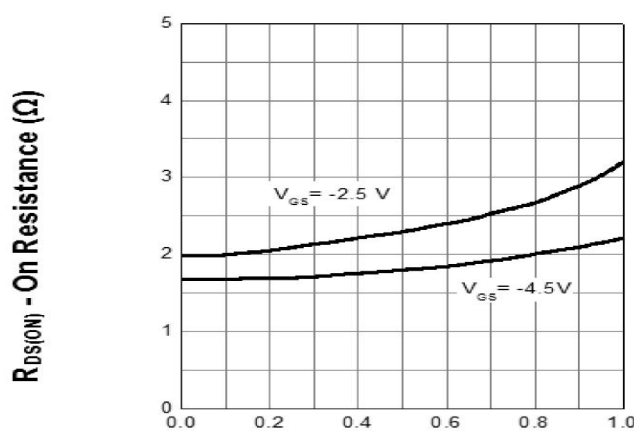
- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- 3) Guaranteed by design, not subject to production.

Typical Characteristics



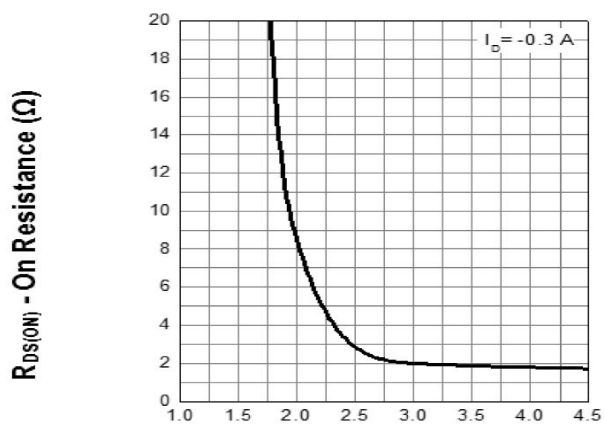
-V_{DS} - Drain-Source Voltage (V)

Fig 1 Typical Output Characteristics



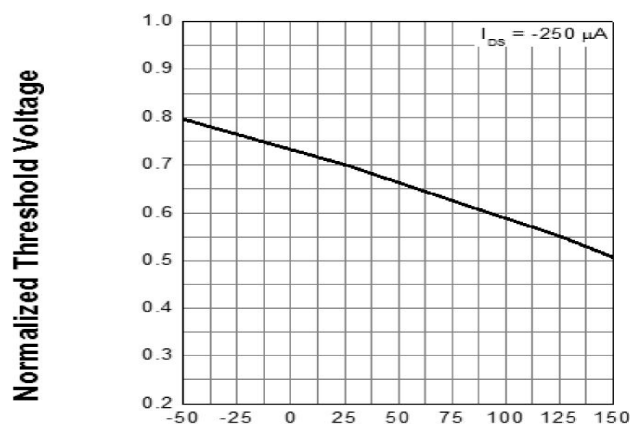
-I_D - Drain Current (A)

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



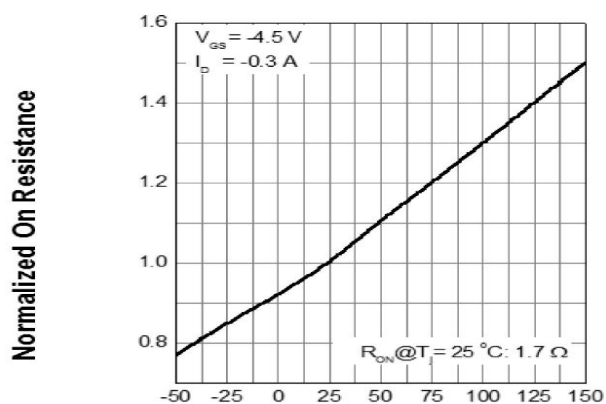
-V_{GS} - Gate-Source Voltage (V)

Fig 3 On-Resistance vs. Gate-Source Voltage



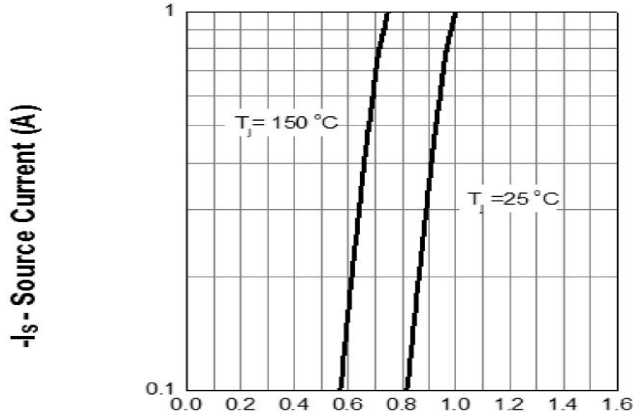
T_J - Junction Temperature (°C)

Fig 4 Normalized V_{GS(th)} vs. Junction Temperature



T_J - Junction Temperature (°C)

Fig 5 Normalized On-Resistance vs. Junction Temperature



-V_{SD} - Source-Drain Voltage (V)

Fig 6 Body-Diode Characteristics

Typical Characteristics

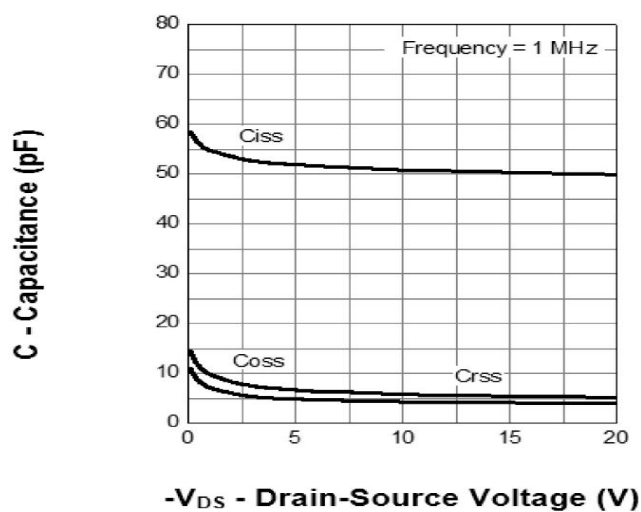


Fig 7 Capacitance Characteristics

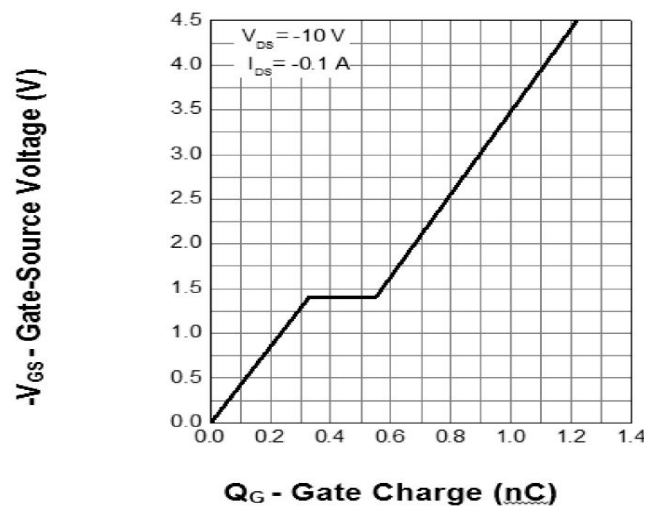
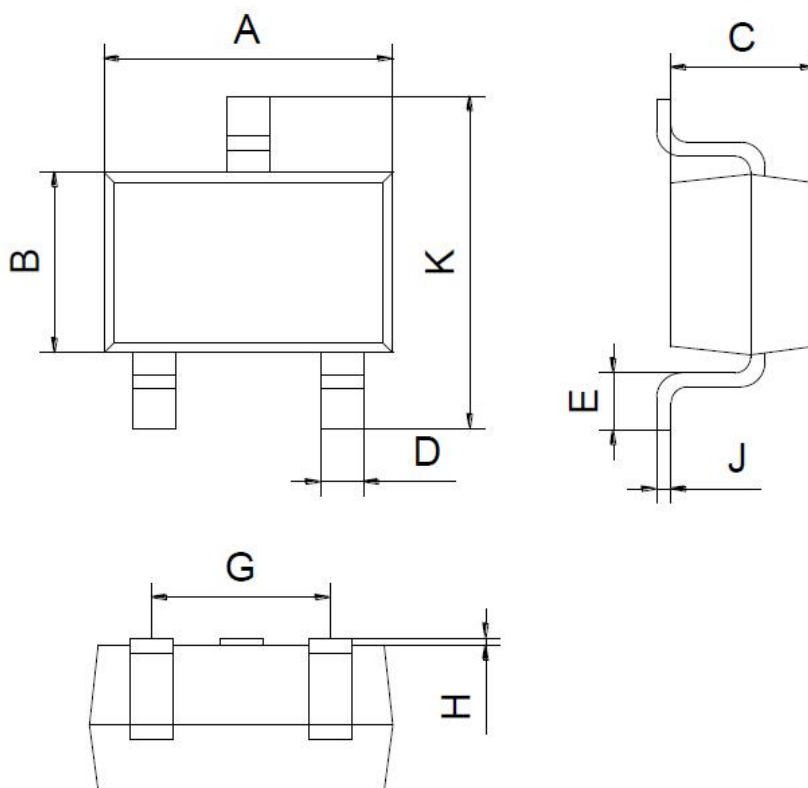


Fig 8 Gate-Charge Characteristics

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