

50V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
50V	0.92Ω@10V	0.3A
	0.98Ω@4.5V	
	1.2Ω@2.5V	

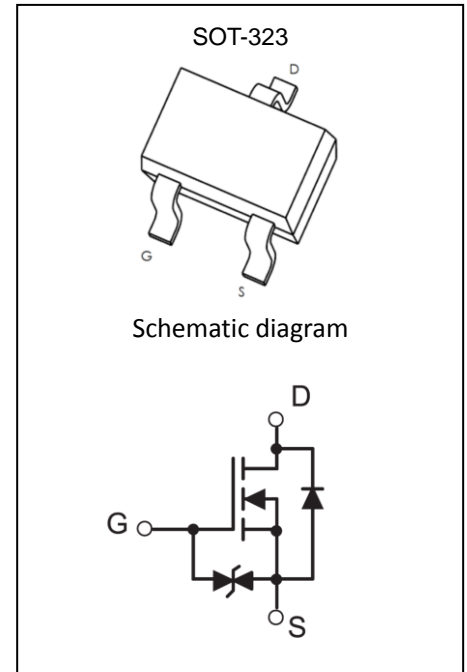
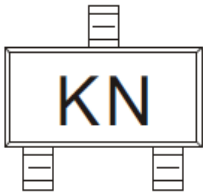
Feature

- Trench Technology Power MOSFET
- Low $R_{DS(on)}$
- Low Gate Charge
- ESD Protected
- AEC-Q101 qualified (Automotive grade with suffix "Q".)

Application

- Load Switch
- DC/DC Converter

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 ^{1,4}	I_D	0.3	A
Pulsed Drain Current ²	I_{DM}	1.2	A
Power Dissipation ^{4,5}	P_D	0.3	W
Thermal Resistance from Junction to Ambient ⁵	$R_{\theta JA}$	416	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

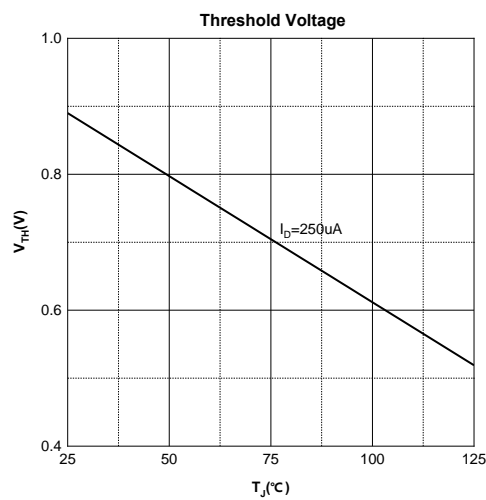
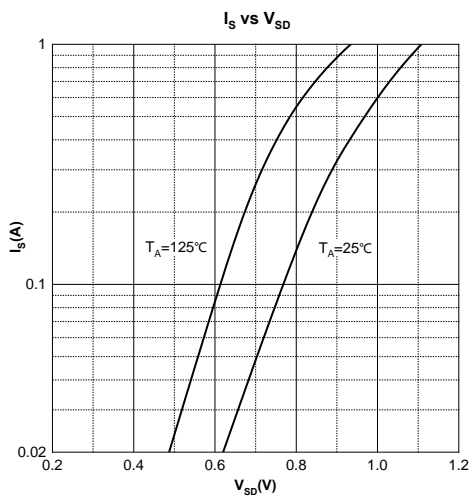
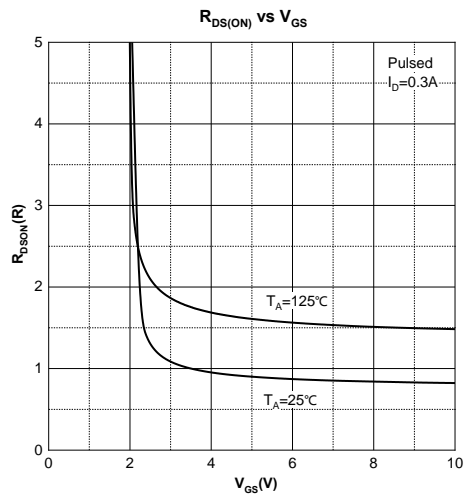
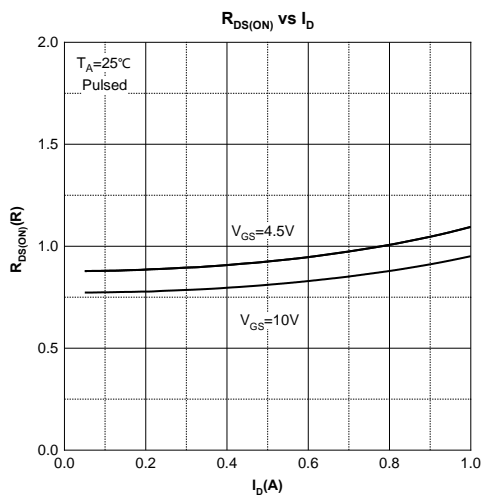
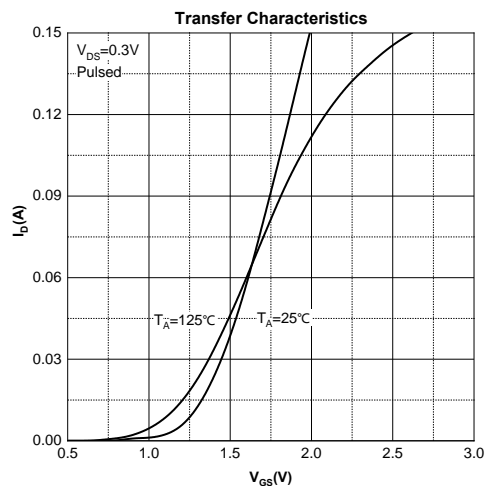
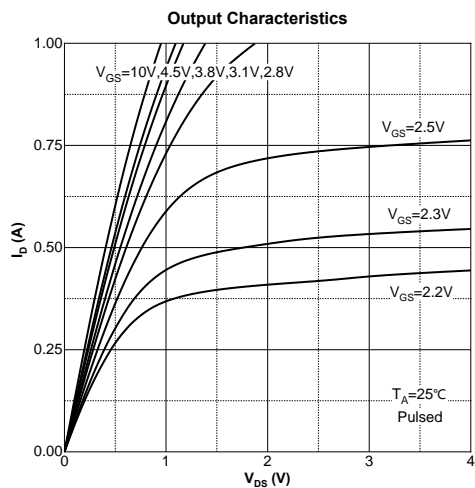
MOSFET ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off 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			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±2	μA
On Characteristics³						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.6	0.9	1.5	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 0.3A		0.92	2.5	Ω
		V _{GS} = 4.5V, I _D = 0.2A		0.98	3	
		V _{GS} = 2.5V, I _D = 0.01A		1.2	4.5	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		30		pF
Output Capacitance	C _{oss}			5.2		
Reverse Transfer Capacitance	C _{rss}			3.3		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		157		
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} = 5V, V _{GS} = 5V, I _D = 10mA, R _G = 10Ω, R _L = 500Ω		15		ns
Turn-on Rise Time	t _r			35		
Turn-off Delay Time	t _{d(off)}			80		
Turn-off Fall Time	t _f			80		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _S = 0.3A			1.2	V

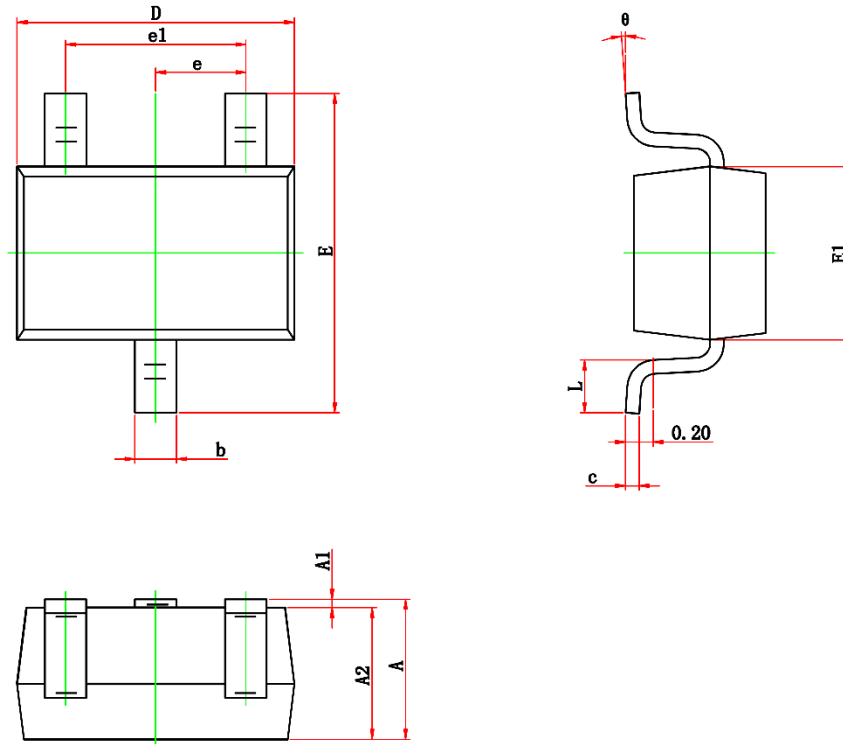
Notes :

- 1.The maximum current rating is limited by package.
- 2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 4.The power dissipation P_D is limited by T_{J(MAX)} = 150°C.
- 5.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Characteristics



SOT-323 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.800	1.100	0.031	0.043
A1	0.000	0.100	0.000	0.004
A2	0.800	1.100	0.031	0.043
b	0.200	0.400	0.008	0.016
c	0.050	0.150	0.002	0.006
D	1.900	2.200	0.075	0.087
E	2.000	2.450	0.079	0.096
E1	1.150	1.350	0.045	0.053
e	0.650TYP.		0.026TYP.	
e1	1.200	1.400	0.047	0.055
L	0.200	0.460	0.008	0.018
θ	0°	8°	0°	8°