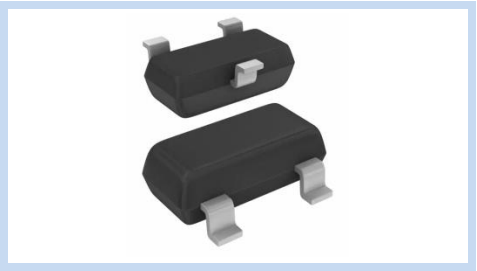
N-Channel MOSFET
20V 2A 1.25W SOT-23 ESD

MFT2N2A0S23E

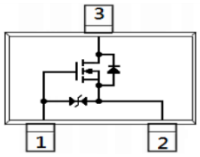
MERITEK

FEATURE



- $R_{DS(ON)}$<150mΩ, V_{GS}=4.5V, I_D=2.0A
- $R_{DS(ON)}$<215mΩ, V_{GS}=2.5V, I_D=1.5A
- $R_{DS(ON)}$<400mΩ, V_{GS}=1.8V, I_D=0.5A
- Advanced Trench Process Technology
- ESD Protected 2KV HBM

MECHANICAL DATA



RoHS

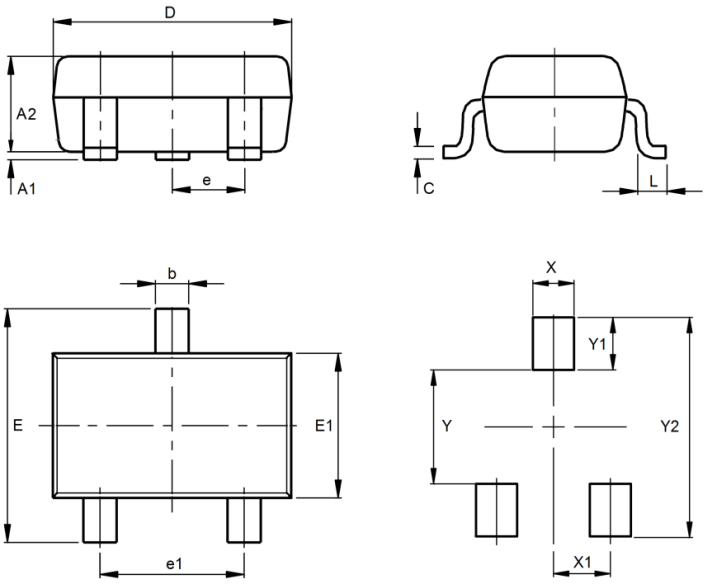
- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±8	V
Drain Current – Continuous		I_D	2	A
Drain Current – Pulsed		I_{DM}	8	A
Power Dissipation	T_a=25°C	P_D	1.25	W
	Derate above 25°C		10	mW/°C
Thermal Resistance, Junction-to-Ambient		$R_{\theta JA}$	100	°C/W
Operating Junction Temperature Range		T_J,T_{stg}	-55 to 150	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.00	0.10
A2	0.90	1.10
b	0.35	0.50
C	0.08	0.20
D	2.80	3.04
e	0.90	1.00
e1	1.80	2.00
E	2.20	2.60
E1	1.20	1.40
L	0.15	
X	0.80	
X1	0.95	
Y	1.10	
Y1	0.90	
Y2	2.90	

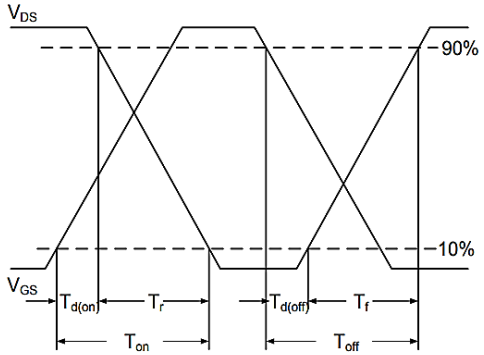


ELECTRICAL CHARACTERISTICS

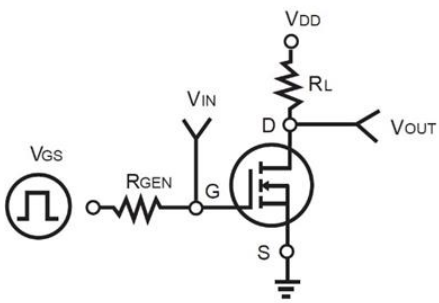
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D= 250uA	BV_{DSS}	20	-	-	V
Zero Gate Voltage Drain Current	V_{DS}= 20V, V_{GS}=0V	I_{DSS}	-	0.01	1	μA
Gate Leakage Current	V_{DS}=0V, V_{GS}=±8V	I_{GSS}	-	±2	±10	μA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D= 250uA	$V_{GS(th)}$	0.5	0.8	1.0	V
Drain-Source On-Resistance	V_{GS}=4.5V, I_D=2A	$R_{DS(ON)}$	-	105	150	mΩ
	V_{GS}= 2.5V, I_D= 1.5A		-	150	215	mΩ
	V_{GS}= 1.8V, I_D= 0.5A		-	250	400	mΩ
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}= 10V, V_{GS}= 4.5V, I_D= 2A	Q_g	-	1.8	-	nC
Gate-Source Charge		Q_{gs}	-	0.4	-	nC
Gate-Drain Charge		Q_{gd}	-	0.45	-	nC
Input Capacitance	V_{DS}= 10V, V_{GS}=0V, F=1.0MHz	C_{iss}	-	92	-	pF
Output Capacitance		C_{oss}	-	25	-	pF
Reverse Transfer Capacitance		C_{rss}	-	9.1	-	pF
Turn-On Delay Time	V_{DD}= 10V, I_D= 2A, R_G= 6Ω, V_{GS}=4.5V	$T_{d(on)}$	-	6.5	-	ns
Rise Time		T_r	-	26.5	-	ns
Turn-Off Delay Time		$T_{d(off)}$	-	43	-	ns
Fall Time		T_f	-	34	-	ns
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Current	-	I_S	-	-	1.6	A
Diode Forward Voltage	I_S=1.6A, V_{GS}=0V	V_{SD}	-	0.9	1.2	V

Note:
1. Pulse width≤ 300μs, duty cycle≤2%
2. Essentially independent of operating temperature typical characteristics
3. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. mounted on a 1 inch square pad of copper
4. The maximum current rating is package limited.

Switching Time Waveform

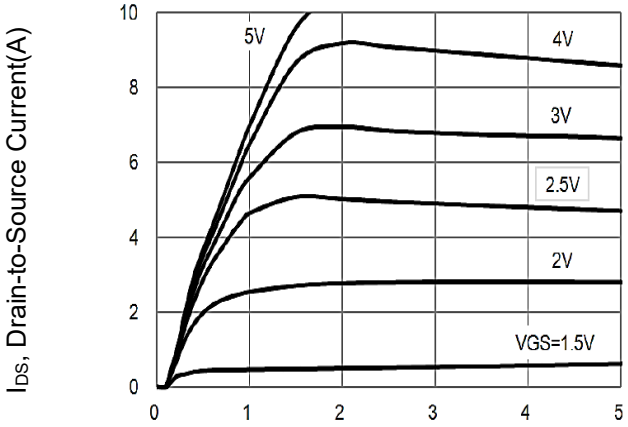


Switching Test Circuit

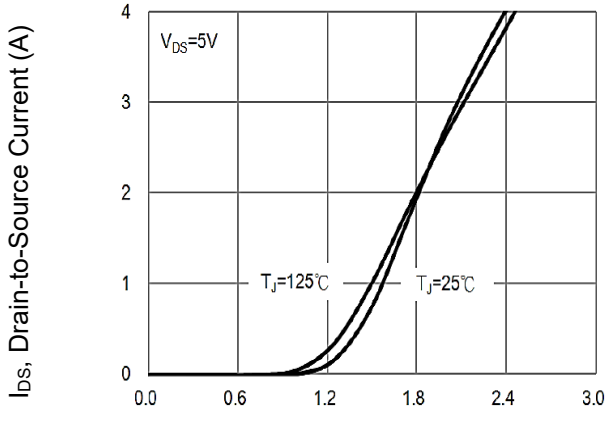


CHARACTERISTIC CURVES

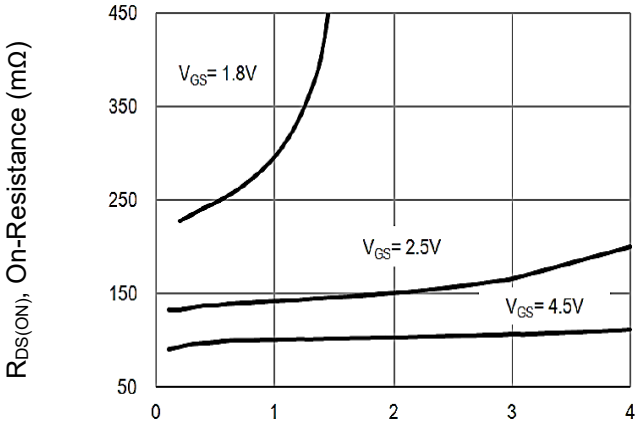
On-Region Characteristics



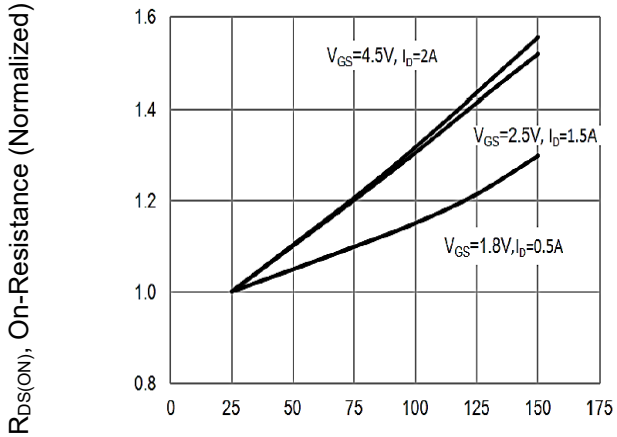
Transfer Characteristics



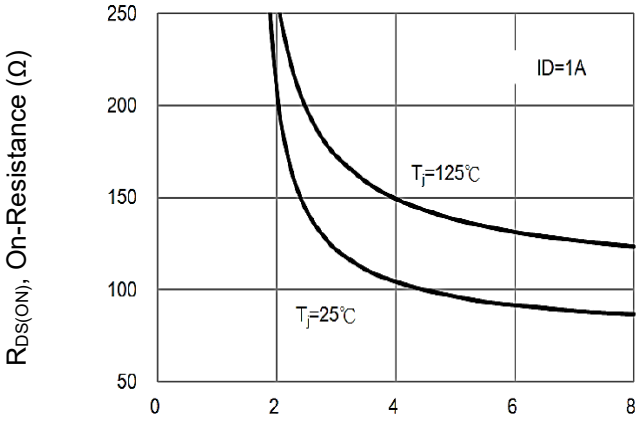
On-Resistance vs. Drain Current



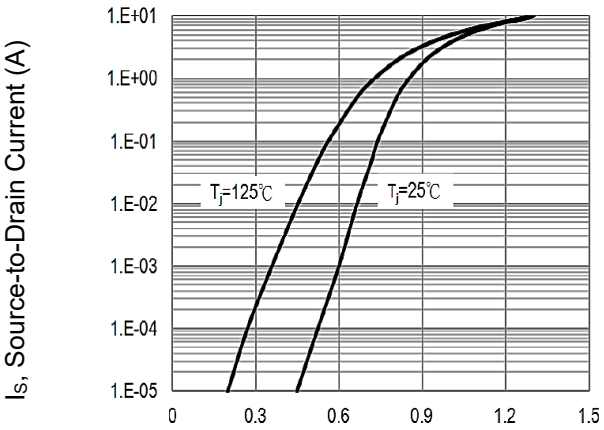
On-Resistance vs. Junction temperature



On-Resistance Variation with VGS

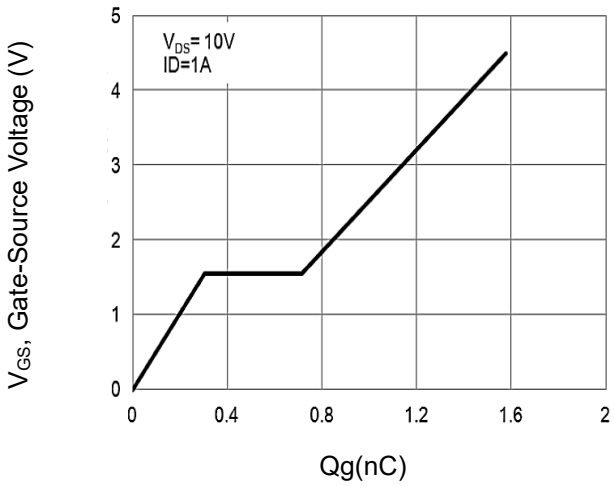


Body Diode Characteristics

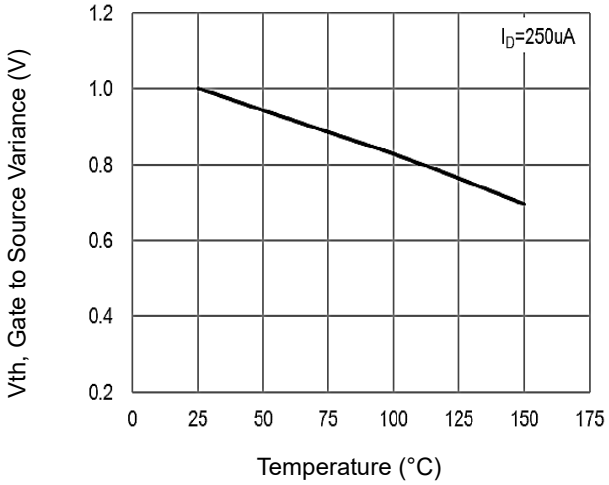


CHARACTERISTIC CURVES

Gate-Charge Characteristics



Threshold Voltage Variation with Temperature



Capacitance vs. Drain-Source Voltage