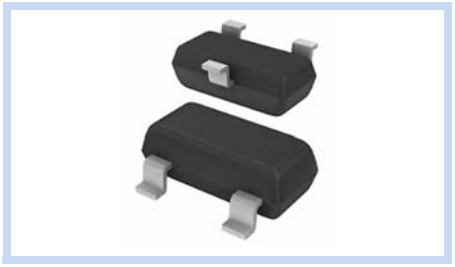
N-Channel MOSFET
100V 2A 1W SOT-23

MFT10N2A0S23

MERITEK

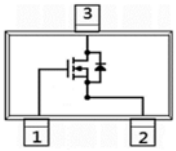
FEATURE

- $R_{DS(ON)}$ <280mΩ, V_{GS}=10V, I_D=1A
- $R_{DS(ON)}$ <310mΩ, V_{GS}=4.5V, I_D=1A
- Advanced Trench Process Technology
- Application: Switch Load, PWN Application, etc.
- Extremely Low Threshold Voltage



MECHANICAL DATA

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



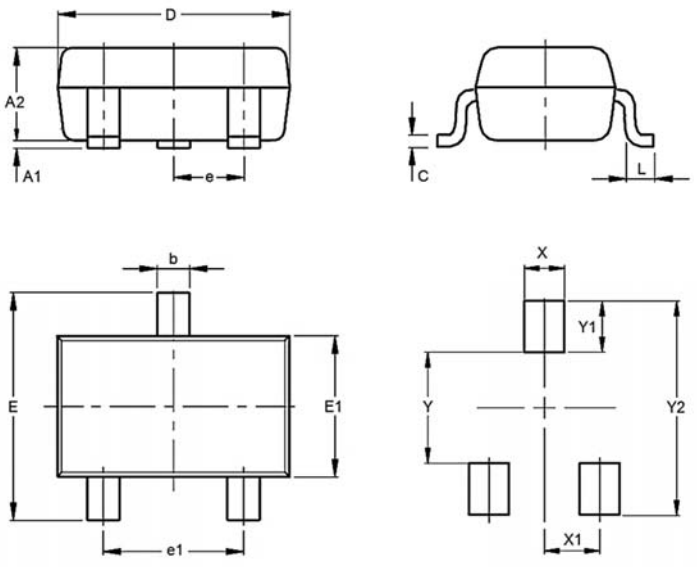
RoHS

MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current – Continuous	I_D	2	A
Drain Current – Pulsed	I_{DM}	8	A
Power Dissipation	P_D	1	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	°C
Thermal Resistance, Junction to Ambient (Note 3)	$R_{\theta JA}$	125	°C / W

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.00	0.10
A2	0.79	1.40
b	0.30	0.50
C	0.08	0.20
D	2.70	3.10
e	0.89	1.02
e1	1.78	2.04
E	2.10	2.80
E1	1.20	1.60
L	0.15	--
X	0.80	
X1	0.95	
Y	1.40	
Y1	1.00	
Y2	3.40	

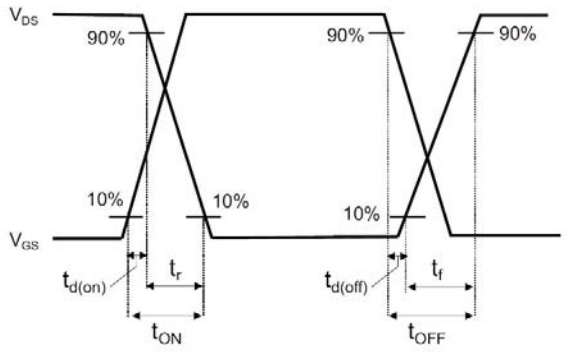


ELECTRICAL CHARACTERISTICS

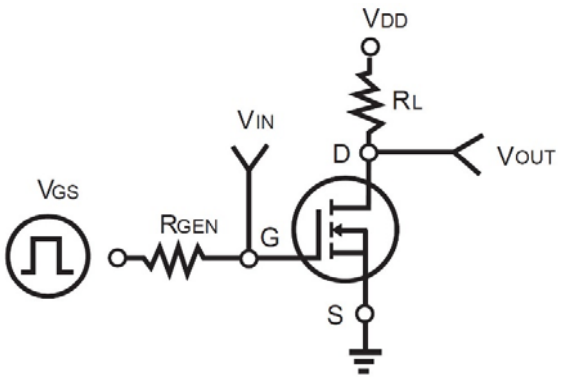
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}= 0V, I_D= 250μA	BV_{DSS}	100	--	--	V
Gate Leakage Current	V_{DS}= 0V, V_{GS}= ±20V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS}= 80V, V_{GS}= 0V	I_{DSS}	--	--	1	μA
Gate Resistance	V_{DS}= 0V, V_{GS}= 0V, F= 1.0MHz	R_G	--	0.9	--	Ω
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Gate Threshold Voltage	V_{GS}= V_{DS}, I_D= 250μA	$V_{GS(th)}$	1.0	--	2.5	V
Static Drain-Source On-Resistance	V_{GS}= 10V, I_D= 1A	$R_{DS(ON)}$	--	--	280	mΩ
	V_{GS}= 4.5V, I_D= 1A		--	--	310	
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Forward Transfer Admittance	V_{DS}= 5V, I_D= 2A	g_{fs}	--	4.1	--	S
Input Capacitance	V_{DS}= 50V, V_{GS}= 0V, F= 1.0MHz	C_{iss}	--	454	--	pF
Output Capacitance		C_{oss}	--	17	--	
Reverse Transfer Capacitance		C_{rss}	--	13	--	
Turn-On Delay Time	V_{DS}= 50V, I_D= 2A, V_{GS}= 10V, R_G= 3.3Ω	$T_{d(on)}$	--	9.5	--	nS
Rise Time		T_r	--	4.0	--	
Turn-Off Delay Time		$T_{d(off)}$	--	8.0	--	
Fall Time		T_f	--	13.0	--	
Total Gate Charge	V_{DS}= 50V, V_{GS}= 4.5V, I_D= 2A	Q_g		3.9		nC
	V_{DS}= 50V, V_{GS}= 10V, I_D= 2A		--	8.4	--	
Gate-Source Charge		Q_{gs}	--	1.9	--	
Gate-Drain Charge		Q_{gd}	--	1.1	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Voltage	I_S= 1A, V_{GS}= 0V	V_{SD}	--	--	1.2	V
Maximum Continuous Drain-Source Forward Current	---	I_S	--	--	2	A
Reverse Recovery Time	I_S= 2A, di/dt= 100A/μs	t_{rr}	--	17	--	ns
Reverse Recovery Charge		Q_{rr}	--	14.5	--	nC

Notes:
1. T_A = 25°C, unless otherwise specified.
2. Pulse Test: pulse width≤100μs, Duty cycle≤2%, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$= 150°C.
3. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

Switching Time Waveform

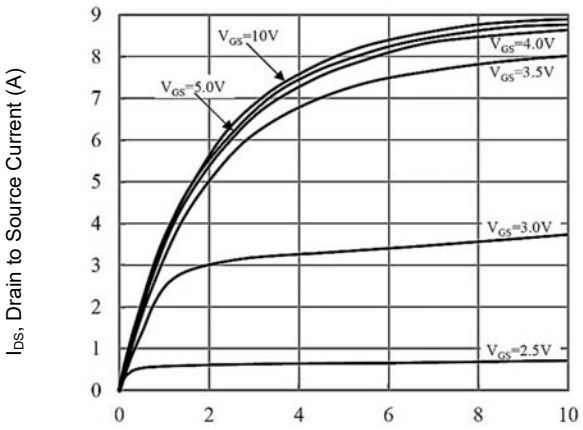


Switching Test Circuit

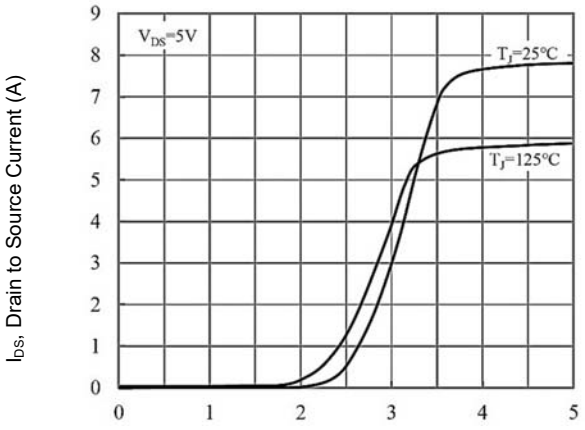


CHARACTERISTIC CURVES

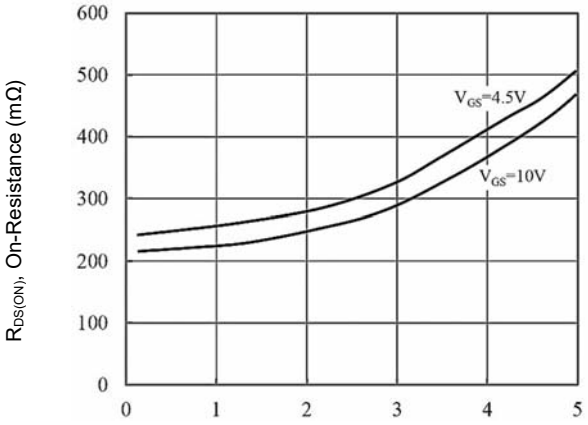
On Region Characteristics



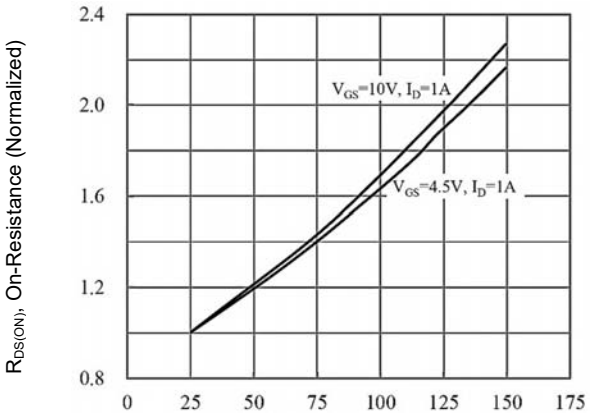
Transfer Characteristics



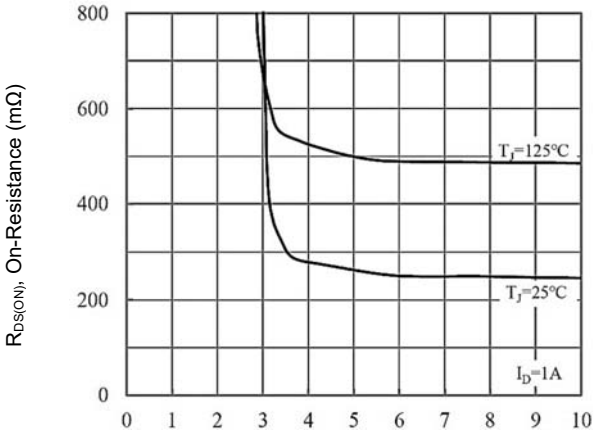
On-Resistance vs. Drain Current



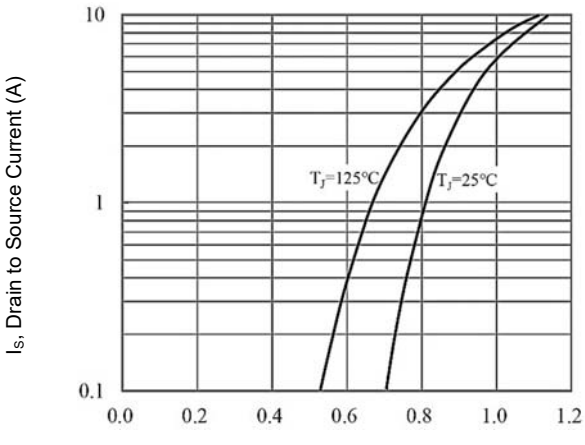
On-Resistance vs. Junction Temperature



On-Resistance Variation with V_{GS}

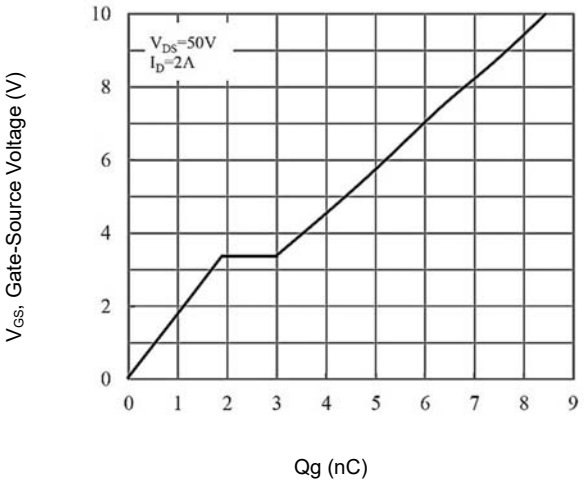


Body Diode Characteristics

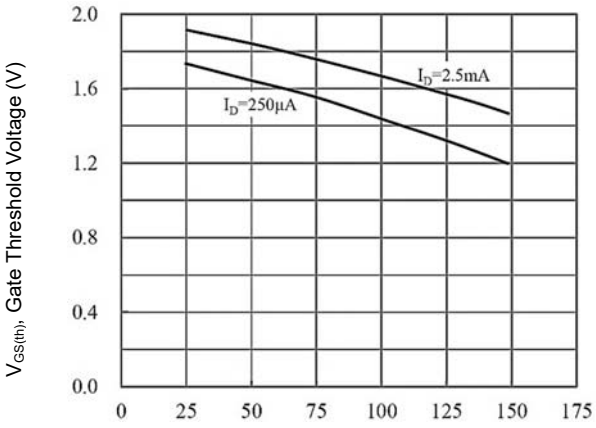


CHARACTERISTIC CURVES

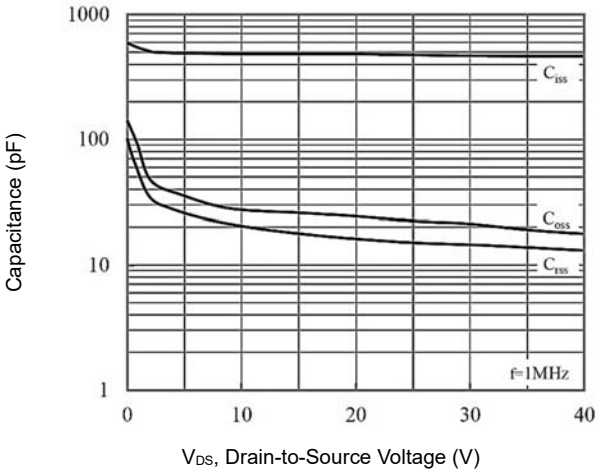
Gate Charge Characteristics



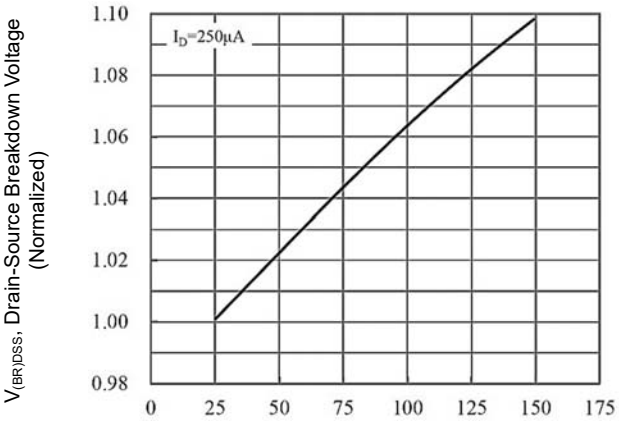
Threshold Voltage Variation with Temperature



Capacitance vs. Drain-Source Voltage



Breakdown Voltage



Drain-Source Leakage Current