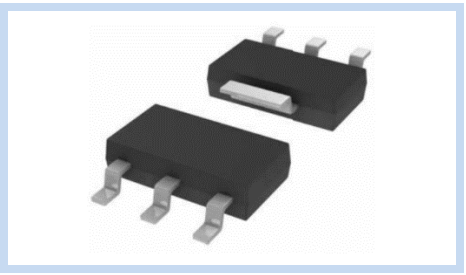
N-Channel MOSFET
60V 4A 3W SOT-223

MFT6N4A0S223

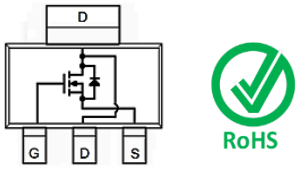
MERITEK

FEATURE



- $R_{DS(ON)}$<102mΩ, V_{GS}=10V, I_D=2A
- $R_{DS(ON)}$<126mΩ, V_{GS}=4.5V, I_D=1A
- High Dense Cell Design for Extremely Low $R_{DS(ON)}$.
- Application: Power Management in Note book, Battery Powered System
- Rugged Construction Design

MECHANICAL DATA



RoHS

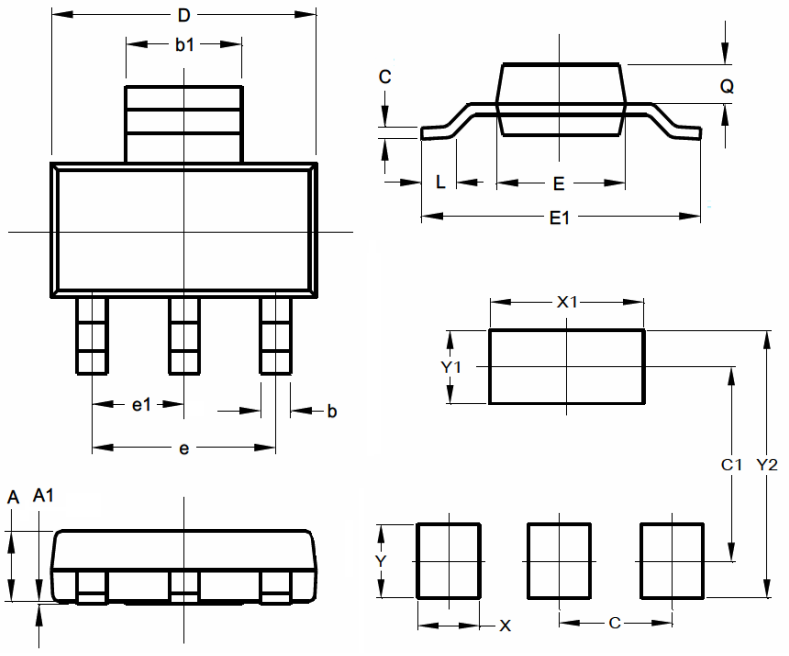
- Case: SOT-223 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current – Continuous	T_A=25℃	I_D	4	A
Drain Current – Pulsed		I_{DM}	16	A
Power Dissipation	T_A=25℃	P_D	3	W
Operating Junction and Storage Temperature Range		T_J , T_{stg}	-55 to 150	℃
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	42	℃ / W

DIMENSIONS

Item	Min (mm)	Max (mm)
A	1.50	1.70
A1	0.02	0.10
b	0.67	0.80
b1	2.95	3.20
C	0.24	0.35
D	6.30	6.85
e	4.60	
e1	2.30	
E	3.30	3.80
E1	6.70	7.30
L	0.90	--
X	1.20	
X1	3.50	
Y	1.60	
Y1	1.80	
Y2	8.00	
c	2.30	
c1	6.30	

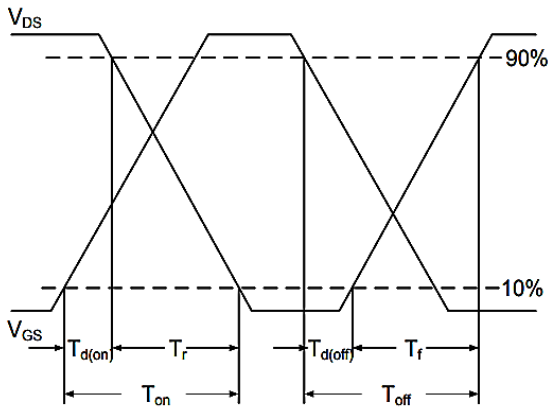


ELECTRICAL CHARACTERISTICS

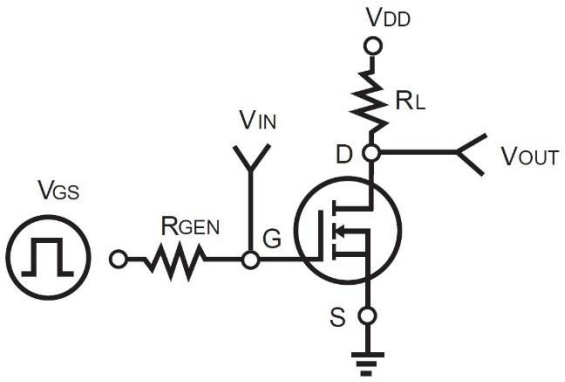
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D= 250μA	BV_{DSS}	60	--	--	V
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=-250μA	$V_{GS(th)}$	1	--	3	V
Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V	I_{GSS}	--	--	±0.1	μA
Zero Gate Voltage Drain Current	V_{DS}= 60V, V_{GS}=0V	I_{DSS}	--	--	1.0	μA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D= A	$R_{DS(ON)}$	--	85	102	mΩ
	V_{GS}=4.5V, I_D=1A		--	97	126	mΩ
Dynamic Characteristics	**Conditions**	**Symbol**	**--**	**Typ.**	**Max**	**Unit**
Input Capacitance	V_{DS}=30V, V_{GS}=0V F=1.0MHz	C_{iss}	--	405	--	pF
Output Capacitance		C_{oss}	--	70	--	pF
Reverse Transfer Capacitance		C_{rss}	--	30	--	pF
Turn-On Delay Time	V_{DS}= 30V, I_D=-1.5A, V_{GS}=10V, R_G=3Ω	$T_{d(on)}$	--	7	--	nS
Rise Time		T_r	--	2.7	--	nS
Turn-Off Delay Time		$T_{d(off)}$	--	18.8	--	nS
Fall Time		T_f	--	1.6	--	nS
Total Gate Charge	V_{DS}=30V, V_{GS}=4.5V, I_D=-2.5A	Q_g	--	3.6	--	nC
Gate-Source Charge		Q_{gs}	--	0.8	--	nC
Gate-Drain Charge		Q_{gd}	--	1.6	--	nC
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Voltage	I_S= -1A,V_{GS}=0V	V_{SD}	--	--	1.2	V
Diode Forward Current	--	I_S	--	--	2.5	A

Note:
1. T_A = 25°C unless otherwise noted.
2. Pulse test: Pulse width<300μs, Duty cycle<2%.
3. Repetitive Rating: Pulse width limited by maximum junction temperature
4. Device mounted on FR-4 Board, t≦10 sec.
5. Guaranteed by design, not subject to production testing.

Switching Time Waveform

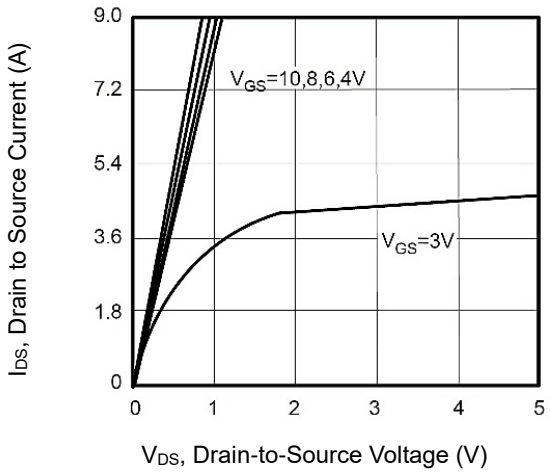


Switching Test Circuit

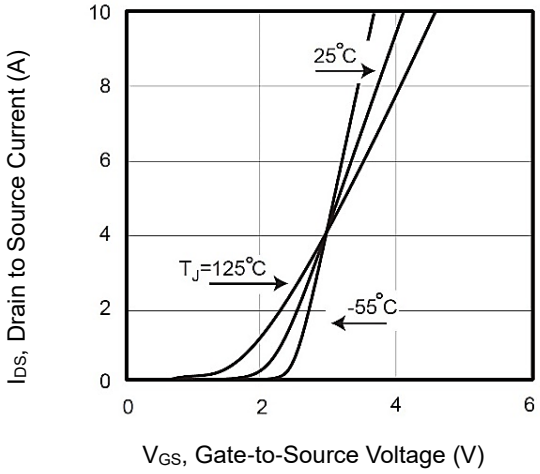


CHARACTERISTIC CURVES

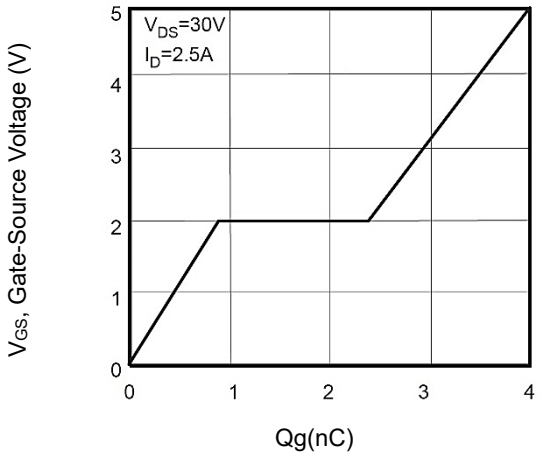
On Region Characteristics



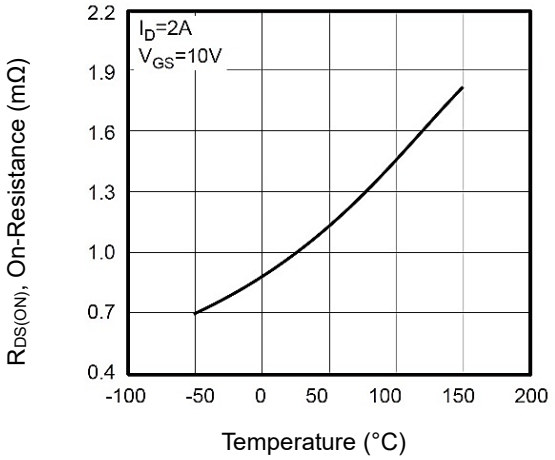
Transfer Characteristics



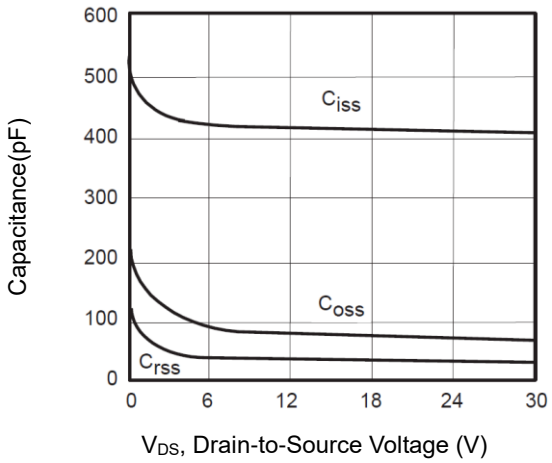
Gate Charge Characteristics



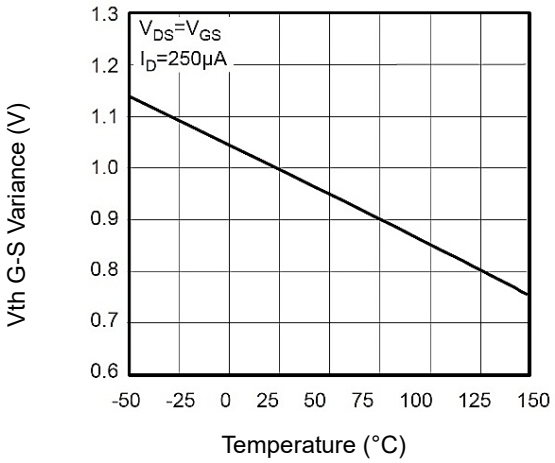
On-Resistance vs. Junction Temperature



Capacitance vs. Drain-Source Voltage

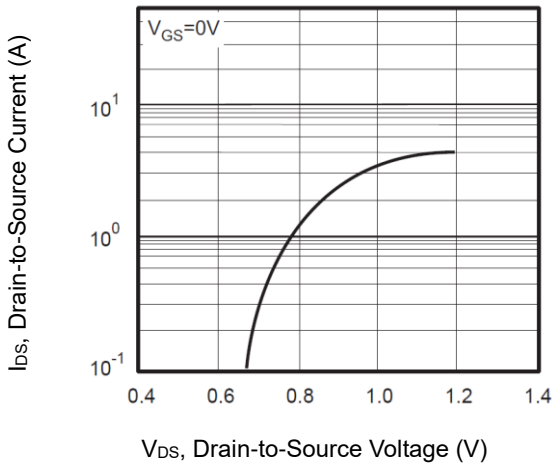


Threshold Voltage Variance vs. Temperature

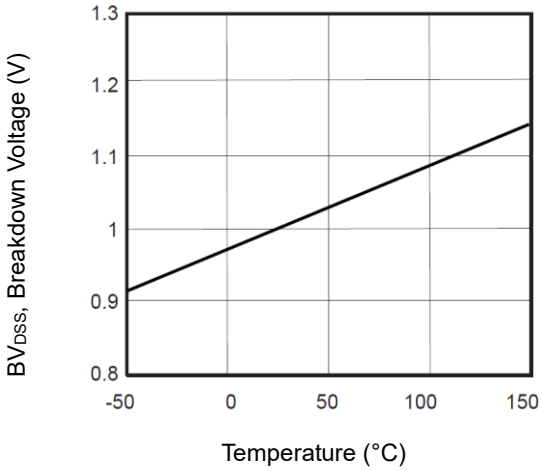


CHARACTERISTIC CURVES

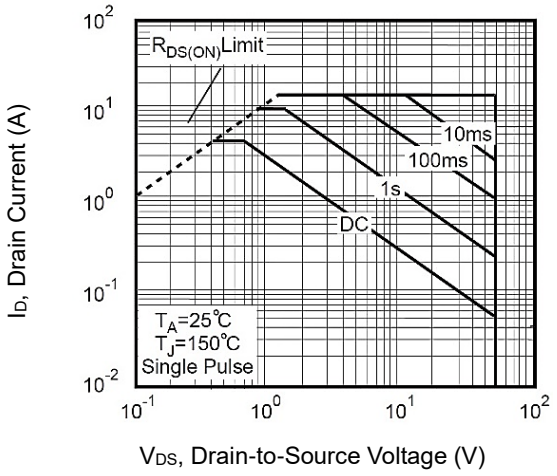
Body Diode Characteristics



Breakdown Voltage vs Temperature



Maximum Safe Operating Area



Normalized Transient Thermal Impedance vs Pulse Width