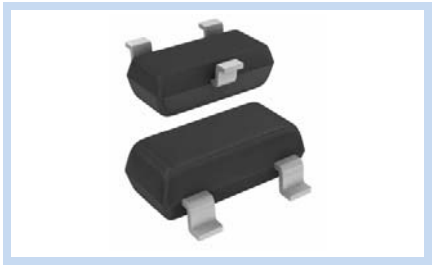
N-Channel MOSFET
60V 0.3A SOT-23

MFT6NA30S23E

MERITEK

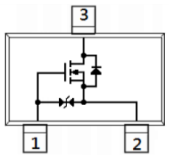
FEATURE

- Advanced Trench Cell Design
- Super Low Gate Charge
- ESD Protected up to 2KV



MECHANICAL DATA

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



RoHS

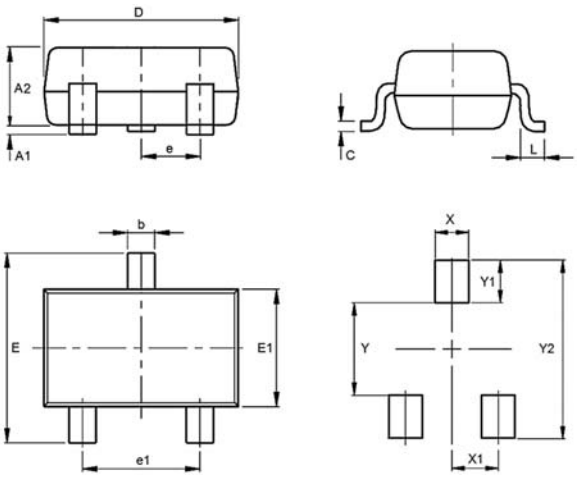
MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	0.46	A
	T_A=70°C		0.34	
Pulsed Drain Current		I_{DM}	1.84	A
Thermal Maximum Junction to Ambient		$R_{\theta JA}$	150	°C/W
Thermal Maximum Junction to Case		$R_{\theta JC}$	106.6	°C/W
Power Dissipation	T_C=25°C	P_D	1.17	W
	T_A=25°C		0.83	W
Operating Junction Temperature Range		T_J,T_{stg}	-55 to 150	°C

Note:
1. The data simulated by surface mounted on a 1 inch^2 FR-4 board with 2 oz. copper
2. The data tested by pulsed, pulse width ≤300μs, duty cycle ≤2%
3. Power dissipation is limited by 150°C junction temperature

DIMENSIONS

SOT-23	Min (mm)	Max (mm)
A1	--	0.10
A2	0.79	1.30
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	--



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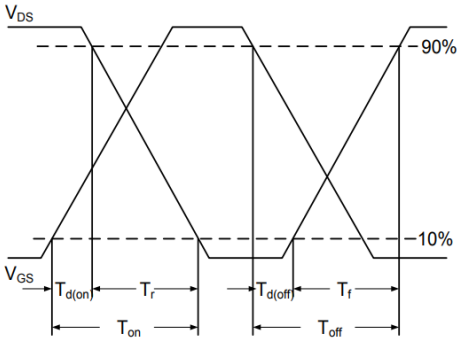
ELECTRICAL CHARACTERISTICS

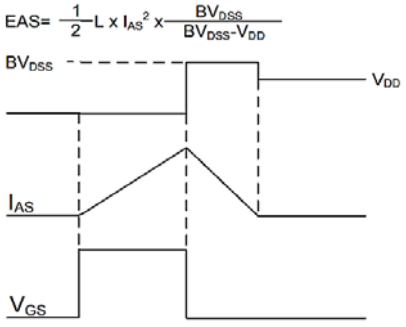
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	V_{DSS}	60	-	-	V
Gate- Body Leakage Current	V_{DS}=0V, V_{GS}=±20V	I_{GSS}	-	-	±10	μA
Zero Gate Voltage Drain Current	V_{DS}=48V, V_{GS}=0V	I_{DSS}	-	-	1	μA
	V_{DS}=48V, V_{GS}=0V, T_J=85°C		-	-	30	
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain Source On-Resistance	V_{GS}=10V, I_D=0.4A	$R_{DS(ON)}$	-	1.9	2.8	Ω
	V_{GS}=4.5V, I_D=0.3A		-	2.4	3.8	
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	0.8	-	2.5	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Gate Resisrance	V_{DS}=0V, V_{GS}=0V, f=1MHz	R_g	-	176	-	Ω
Total Gate Charge	V_{DS}=10V, I_D=0.4V, V_{GS}=4.5A	Q_g	-	1.11	-	nC
Gate-Source Charge		Q_{gs}	-	0.28	-	
Gate-Drain Charge		Q_{gd}		0.07	-	
Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	C_{iss}	-	15.9	-	pF
Output Capacitance		C_{oss}	-	2.30	-	
Reverse Transfer Capacitance		C_{rss}	-	0.3	-	
Turn-On Delay Time	V_{DD}=30V, V_{GS}=10V, I_D=0.2A, R_G=3.3 Ω	$T_{d(on)}$	-	3.4	-	nS
Rise Time		T_r	-	17.6	-	
Turn-Off Delay Time		$T_{d(off)}$	-	15.6	-	
Fall Time		T_f	-	46.0	-	
Drain-Source Chacteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Voltage	V_{GS}=0V, I_S=0.4A,	V_{SD}	-	-	1.3	V
Reverse Recovery Time	I_F=0.4A. dI/dt=100A/ μs	T_{rr}	-	40	-	mA
Reverse Recovery Change		Q_{rr}	-	40	-	mA

Note:
1. Guaranteed by design, not tested in mass production

Switching Time Waveform

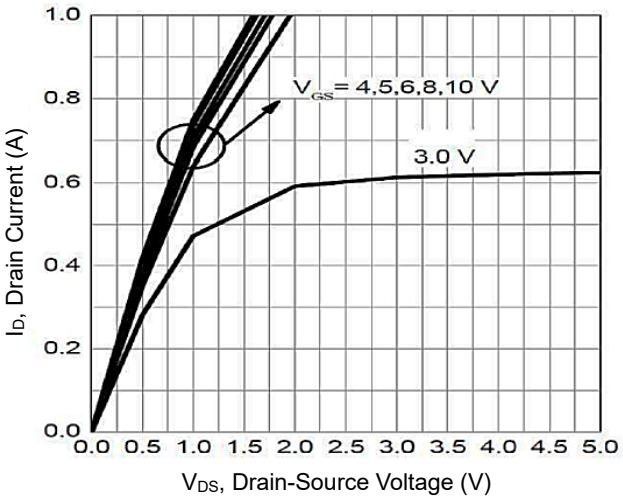


EAS Waveform

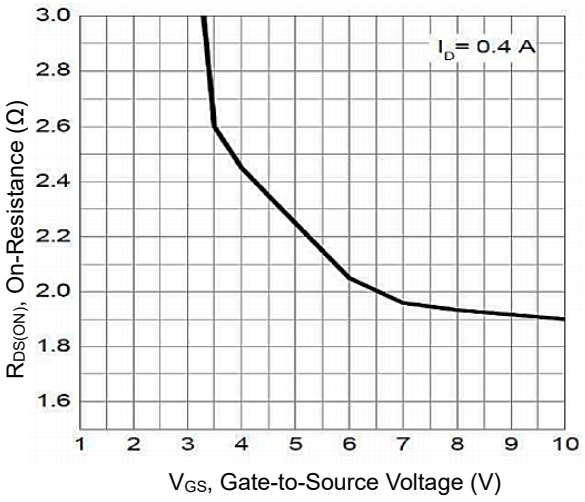


CHARACTERISTIC CURVES

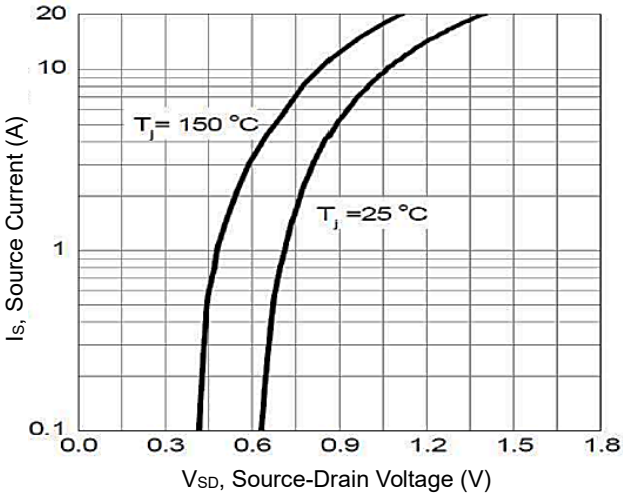
Typical Output Chracteristics



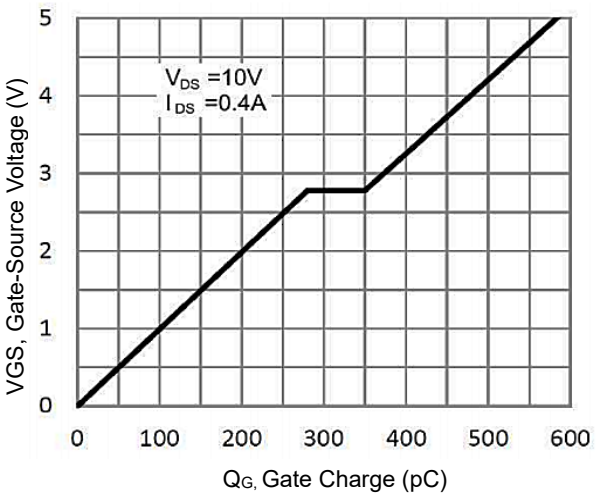
On-Resistance vs. G-S Voltage



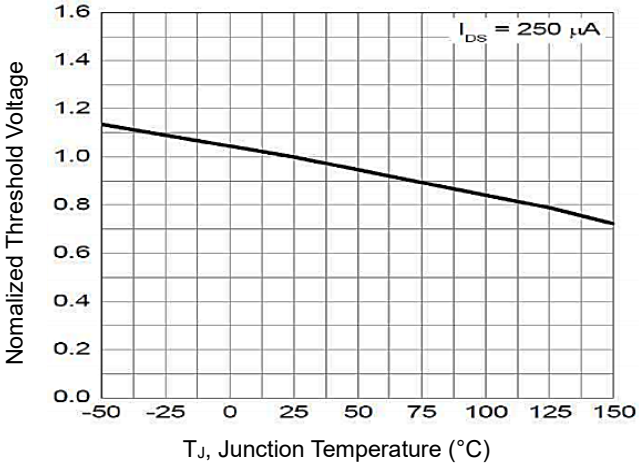
Forward Chracteristics Of Reverse



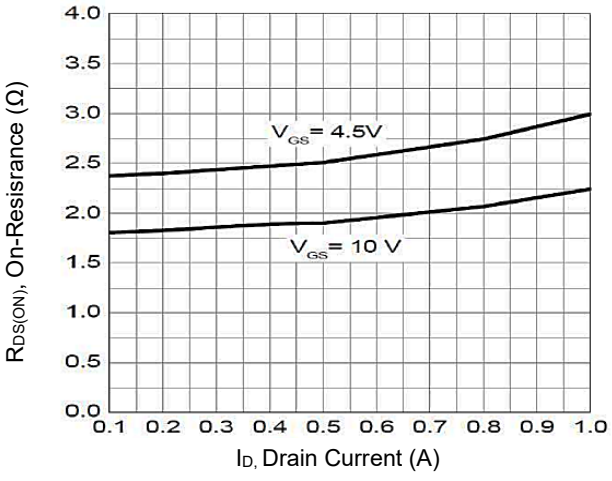
Gate-Charge Characteristics



Nomalized $V_{GS(th)}$ vs.s T_J

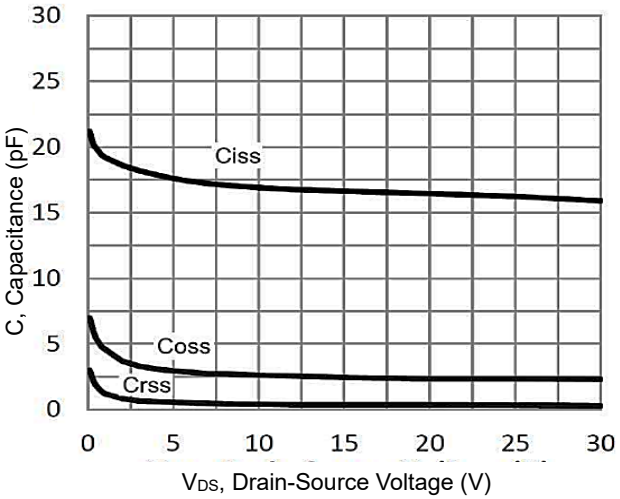


Drain-Source on Resistance

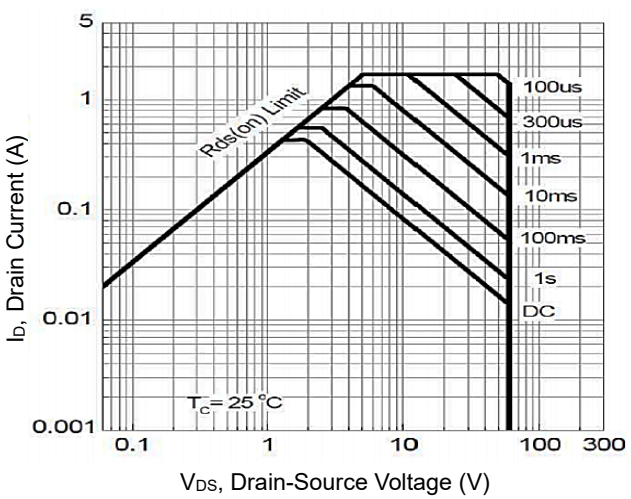


CHARACTERISTICS CURVES

Capacitance



Safe Operating Area



Nomalized Maximum Transient Thermal Impedance