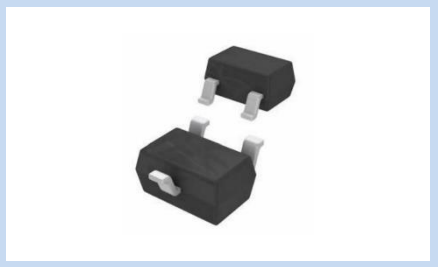
N-Channel MOSFET
60V 0.3A 0.2W SOT-323 ESD

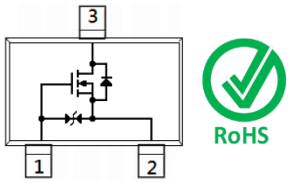
MFT6NA30S323E

MERITEK

FEATURE



- $R_{DS(ON)}$<3Ω, V_{GS}=10V, I_D=500mA
- $R_{DS(ON)}$<4Ω, V_{GS}=4.5V, I_D= 200mA
- Advanced Trench Poceess technology
- Application: Battery Operated Systems, Solid-State Relays, Displays, Lamps, Solenoids, Memories, etc
- ESD Protected 2KV HBM



MECHANICAL DATA

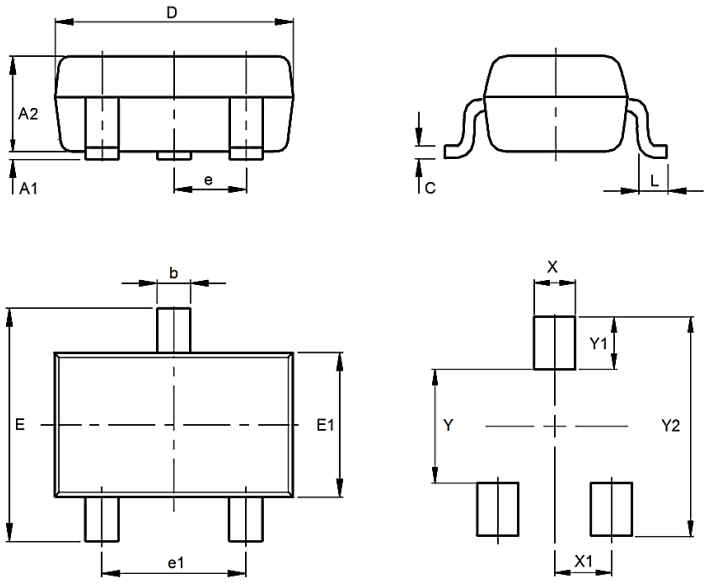
- Case: SOT-323 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current – Continuous	I_D	300	mA
Drain Current – Pulsed	I_{DM}	800	mA
Power Dissipation	P_D	200	mW
Operating Junction Temperature and Storage Temperature	T_J, T_{stg}	-55 to 150	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	625	°C / W

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	--	0.10
A2	0.90	1.10
b	0.60	0.02
C	0.05	0.15
D	1.80	2.20
e	0.90	1.10
e1	1.20	1.40
E	2.20	2.60
E1	1.20	1.40
L	0.10	
X	0.66	
X1	0.65	
Y	1.00	
Y1	0.86	
Y2	2.70	

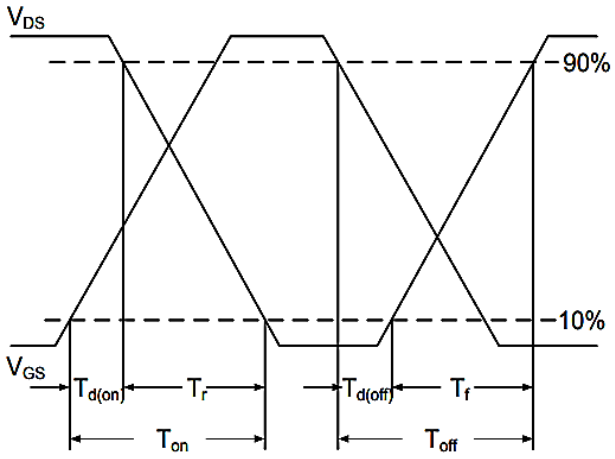


ELECTRICAL CHARACTERISTICS

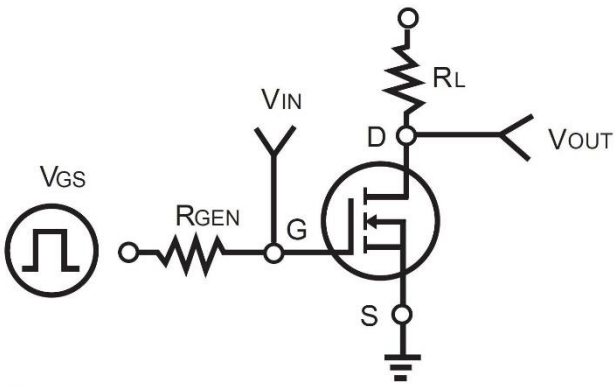
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D= 10μA	BV_{DSS}	60	--	--	V
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D= 250μA	$V_{GS(th)}$	1.0	--	2.5	V
Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V	I_{GSS}	--	--	±10	μA
Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V	I_{DSS}	--	--	1	μA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=500mA	$R_{DS(ON)}$	--	--	3	Ω
	V_{GS}=4.5V, I_D=200mA		--	--	4	
Dynamic Characteristics	**Conditions**	**Symbol**	**--**	**Typ.**	**Max**	**Unit**
Gate Resistance	V_{GS}= 0V, V_{DS}= 0V, F=1.0MHz	R_g	--	200	--	Ω
Input Capacitance	V_{DS}= 25V, V_{GS}= 0V F=1.0MHz	C_{iss}	--	22.5	50.0	pF
Output Capacitance		C_{oss}	--	9.0	25.0	
Reverse Transfer Capacitance		C_{rss}	--	7.5	10.0	
Turn-On Delay Time	V_{DS}=30V, I_D=500mA, V_{GS}=10V, R_G=25Ω	$T_{d(on)}$	--	2.7	--	nS
Rise Time		T_r	--	2.5	--	
Turn-Off Delay Time		$T_{d(off)}$	--	13.0	--	
Fall Time		T_f	--	8.0	--	
Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_D=250mA	Q_g	--	0.44	--	nC
Gate-Source Charge		Q_{gs}	--	0.20	--	
Gate-Drain Charge		Q_{gd}	--	0.10	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Voltage	I_S=500mA,V_{GS}=0V	V_{SD}	--	0.85	--	V
Forward Transconductance	V_{DS}=10V,I_D= 200mA	g_{FS}	80	--	--	mS
Reverse Recovery Time	I_S=500mA, dI/dt=100A/μs	t_{rr}	--	30	--	nS
Reverse Recovery Charge		Q_{rr}	--	29	--	nC

Note:
1. Pulse width<300μs, Duty cycle<2%.
2. Guaranteed by design, not subject to production testing.
3. The maximum current rating is package limited.

Switching Time Waveform

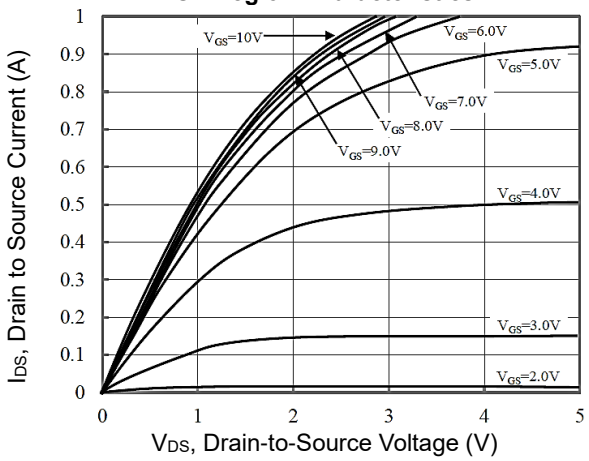


Switching Test Circuit

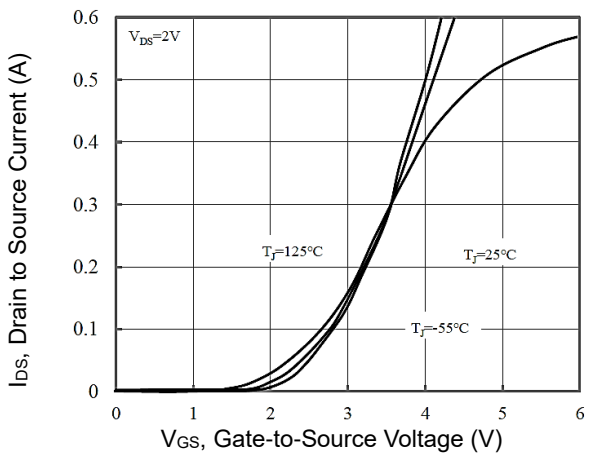


CHARACTERISTIC CURVES

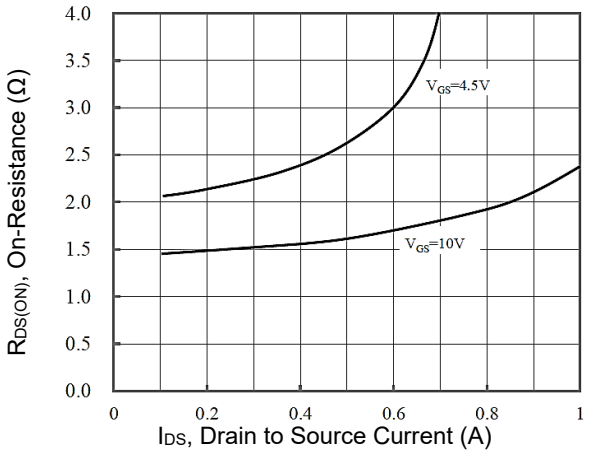
On Region Characteristics



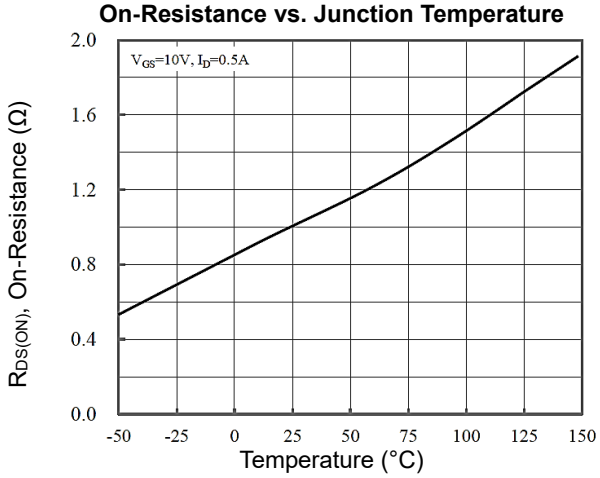
Transfer Characteristics



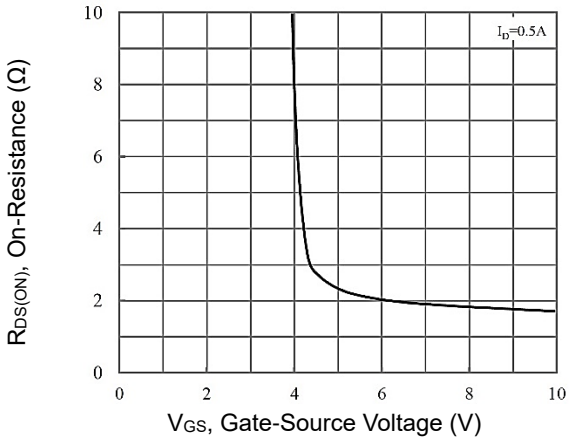
On-Resistance vs. Drain Current



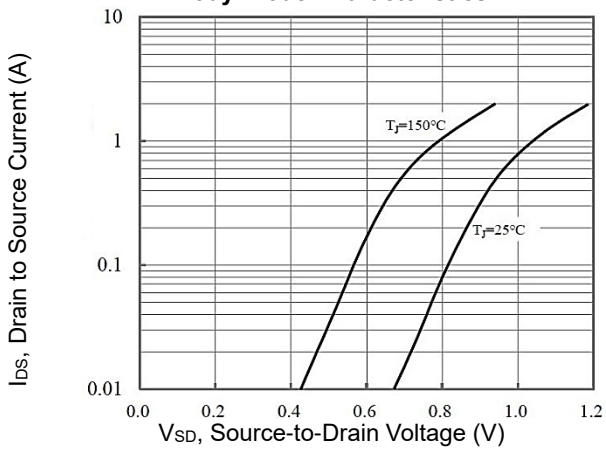
On-Resistance vs. Junction Temperature



On-Resistance Variation with V_{GS}

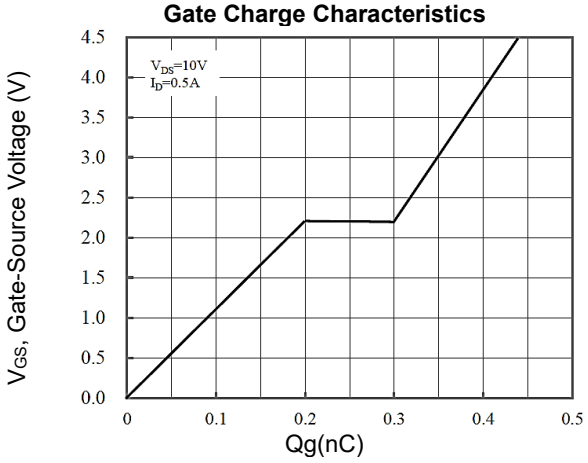


Body Diode Characteristics

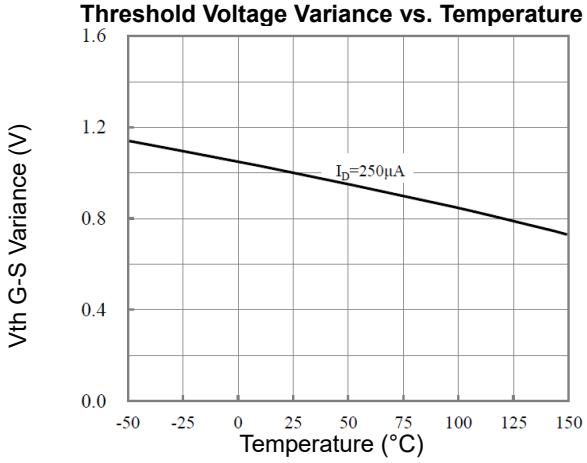


CHARACTERISTIC CURVES

Gate Charge Characteristics



Threshold Voltage Variance vs. Temperature



Capacitance vs. Drain-Source Voltage