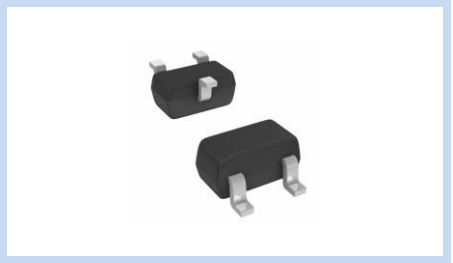
N-Channel MOSFET
50V 350mA SOT-523 ESD

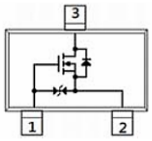
MFT5NA35S523E

MERITEK

FEATURE



- $R_{DS(ON)}$=1.6Ω, V_{GS}=10V, I_D=0.5A
- $R_{DS(ON)}$=2.5Ω, V_{GS}=4.5V, I_D=0.2A
- $R_{DS(ON)}$=4.5Ω, V_{GS}=2.5V, I_D=0.1A
- ESD Protected ≥2KV
- Low Voltage, Low Current Switching Applications
- Application: Load Switching, Power Management Functions, Motor Driving



RoHS

MECHANICAL DATA

- Case: SOT-523 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

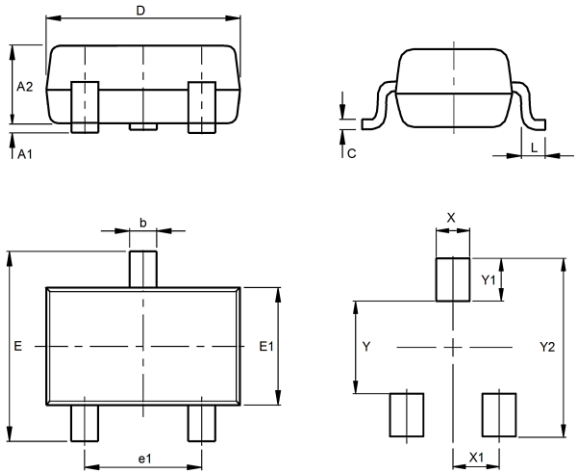
MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	50	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current – Continuous	T_C=25°C	I_D	350	mA
Drain Current – Pulsed		I_{DM}	1.2	A
Power Dissipation		P_D	223	mW
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	560	°C/W
Junction Temperature		T_J	-55 to +150	°C
Storage Temperature Range		T_{STG}	-55 to +150	°C

Note:
1. $R_{\theta JA}$ 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
2. T_A =25°C Unless Otherwise Noted.

DIMENSIONS

Item	Min. (mm)	Max. (mm)
A1	--	0.10
A2	0.70	0.90
b	0.25	0.35
C	0.10	0.20
D	1.50	1.70
E	1.45	1.75
E1	0.70	0.90
e1	0.90	1.10
L	0.10	--
X	0.70	
X1	0.50	
Y	0.60	
Y1	0.70	
Y2	2.00	

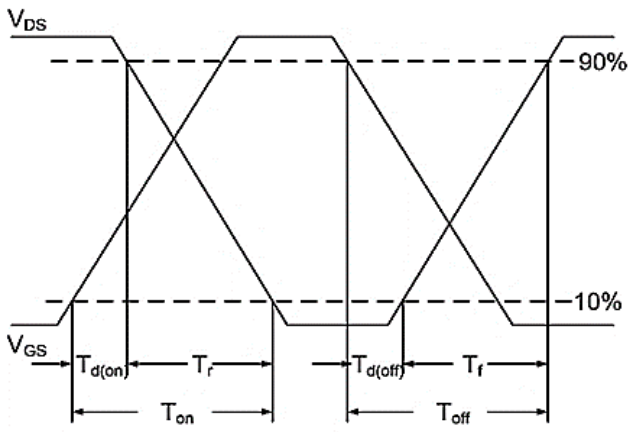


ELECTRICAL CHARACTERISTICS

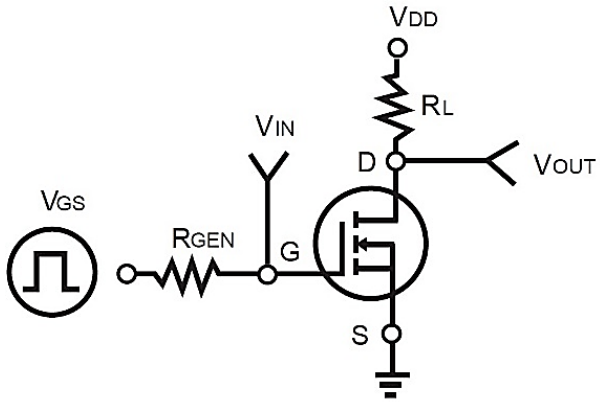
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	BV_{DSS}	50	--	--	V
Drain-Source Leakage Current	V_{DS}=40V, V_{GS}=0V	I_{DSS}	--	--	1	μA
Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	--	--	±10	μA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=0.5A	$R_{DS(ON)}$	--	--	1.6	Ω
	V_{GS}=4.5V, I_D=0.2A		--	--	2.5	
	V_{GS}=2.5V, I_D=0.1A		--	--	4.5	
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	$V_{GS(th)}$	0.8	--	1.5	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=25V, V_{GS}=4.5V, I_D=0.25A	Q_g	--	0.63		nC
Gate-Source Charge		Q_{gs}	--	0.20	--	
Gate-Drain Charge		Q_{gd}	--	0.23	--	
Turn-On Delay Time	V_{DD}=25V, V_{GS}=10V, R_G=6Ω, I_D=0.5A	$T_{d(on)}$	--	2.2	--	ns
Rise Time		T_r	--	19.2	--	
Turn-Off Delay Time		$T_{d(off)}$	--	6.2	--	
Fall Time		T_f	--	23	--	
Input Capacitance	V_{DS}=25V, V_{GS}=0V, F=1MHz	C_{iss}	--	35	--	pF
Output Capacitance		C_{oss}	--	10	--	
Reverse Transfer Capacitance		C_{rss}	--	8.5	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Voltage	V_{GS}=0V, I_S=0.5A	V_{SD}	--	--	1.5	V

Note:
1. T_A =25°C Unless Otherwise Noted.

Switching Time Waveform

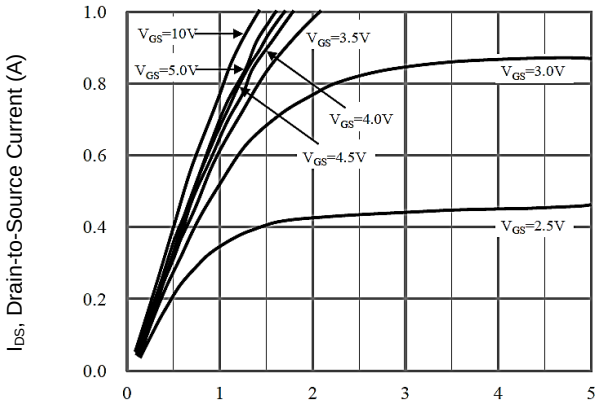


Switching Test Circuit

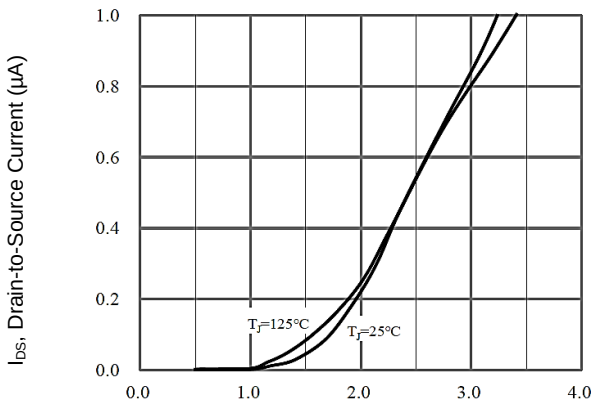


CHARACTERISTIC CURVES

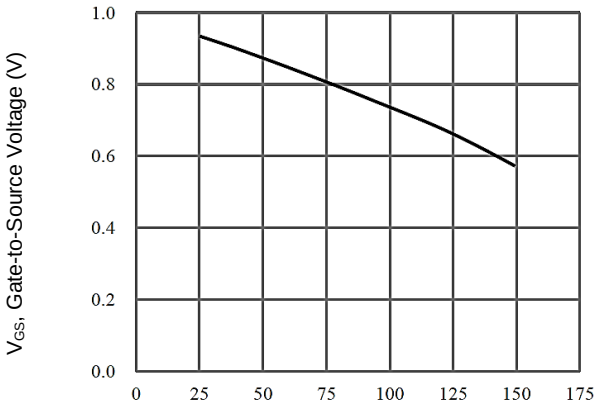
Output Characteristics



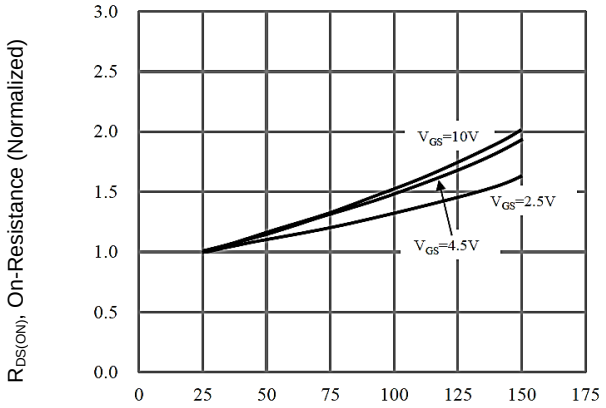
Transfer Characteristics



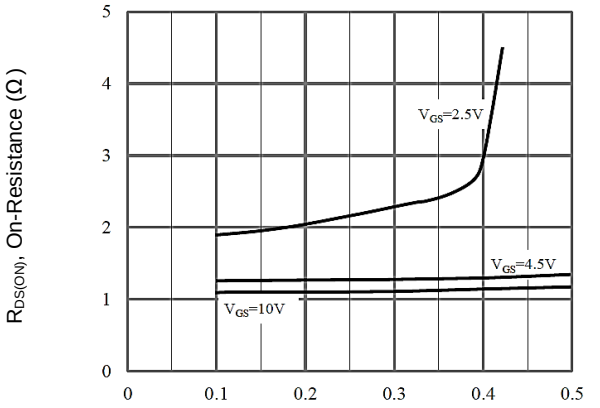
Gate-to-Source vs. Junction Temperature



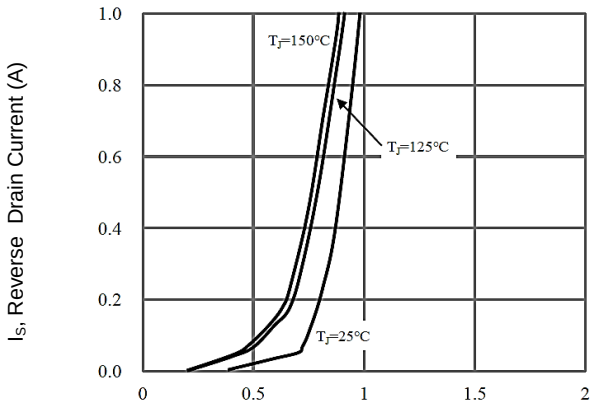
On-Resistance Vs. Junction Temperature



On-Resistance vs Drain Current

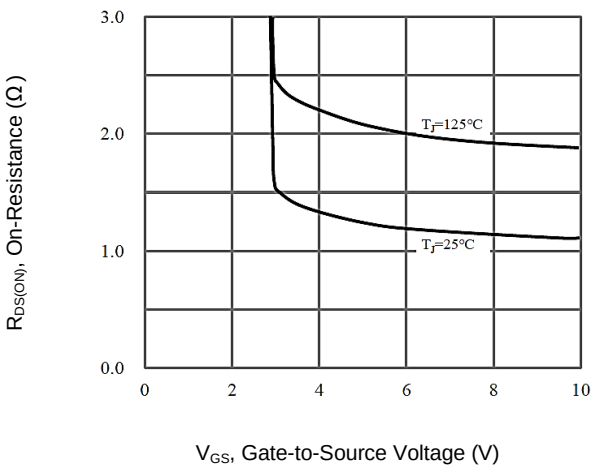


Source- Drain Diode Forward



CHARACTERISTIC CURVES

On-Resistance vs. Gate-Source Voltage



Capacitance