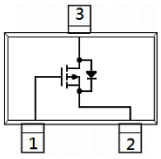
P-Channel MOSFET
20V 4.5A 1W SOT-23

MFT2P4A5S23

MERITEK

FEATURE

- $R_{DS(ON)}$<57mΩ at V_{GS}=-4.5V
- $R_{DS(ON)}$<76mΩ at VGS=-2.5V
- High Power and Current Handing Capability
- Application: Battery Switch, DC/DC Converter, etc



RoHS

MECHANICAL DATA

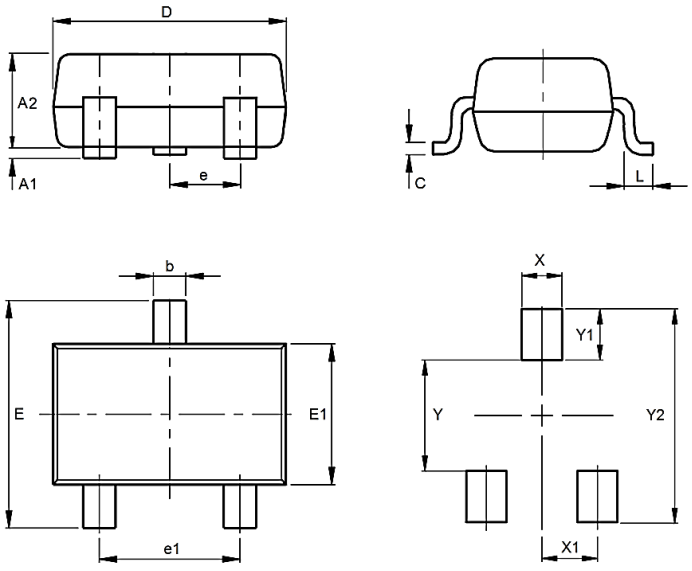
- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current – Continuous	I_D	-4.5	A
Drain Current – Pulsed	I_{DM}	-18	A
Power Dissipation	P_D	1	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	125	°C/W
Operating Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{stg}	-55 to 150	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.20
D	2.80	3.00
e	0.95	
e1	1.80	2.00
E	2.25	2.55
E1	1.20	1.40
L	0.55	
X	0.80	
X1	0.95	
Y	1.00	
Y1	1.00	
Y2	3.00	

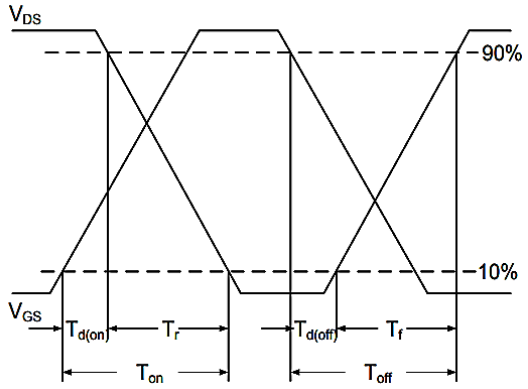


ELECTRICAL CHARACTERISTICS

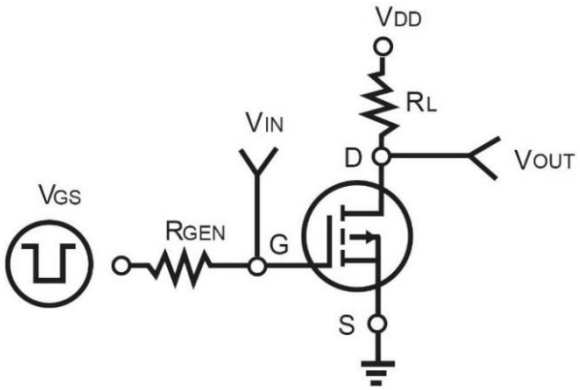
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	BV_{DSS}	-20	--	--	V
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=-250μA	$V_{GS(th)}$	-0.4	-0.75	-0.9	V
Gate Leakage Current	V_{DS}=0V, V_{GS}=±12V	I_{GSS}	--	--	±0.1	μA
Zero Gate Voltage Drain Current	V_{DS}=-16V, V_{GS}=0V	I_{DSS}	--	--	-1	μA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=-4.5V, I_D=-3.3A	$R_{DS(ON)}$	--	35	57	mΩ
	V_{GS}=-2.5V, I_D=-2.8A		--	45	76	
Dynamic Characteristics	**Conditions**	**Symbol**	**--**	**Typ.**	**Max**	**Unit**
Input Capacitance	V_{DS}=-15V, V_{GS}=0V, F=1.0MHz	C_{iss}	--	686	--	pF
Output Capacitance		C_{oss}	--	90.8	--	
Reverse Transfer Capacitance		C_{rss}	--	80.4	--	
Turn-On Delay Time	V_{DS}=-10V, I_D=-3A, V_{GS}=-4.5V, R_G=3.3Ω	$T_{d(on)}$	--	4.8	--	nS
Rise Time		T_r	--	9.6	--	
Turn-Off Delay Time		$T_{d(off)}$	--	52	--	
Fall Time		T_f	--	8.4	--	
Total Gate Charge	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-3A	Q_g	--	9.7	--	nC
Gate-Source Charge		Q_{gs}	--	2.05	--	
Gate-Drain Charge		Q_{gd}	--	2.43	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Continuous Current	--	I_s	--	--	-4.5	A
Diode Forward Voltage	I_S=-1A,V_{GS}=0V, T_J= 25°C	V_{SD}	--	--	-1.2	V

Note:
1. T_A = 25°C unless otherwise noted.

Switching Time Waveform

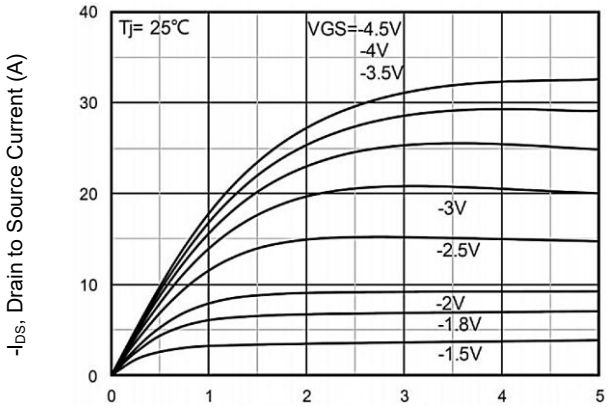


Switching Test Circuit

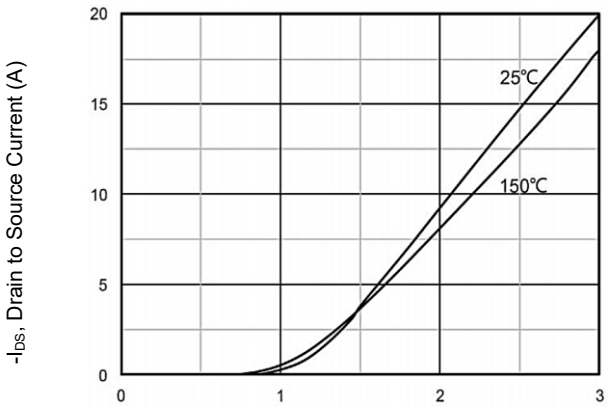


CHARACTERISTIC CURVES

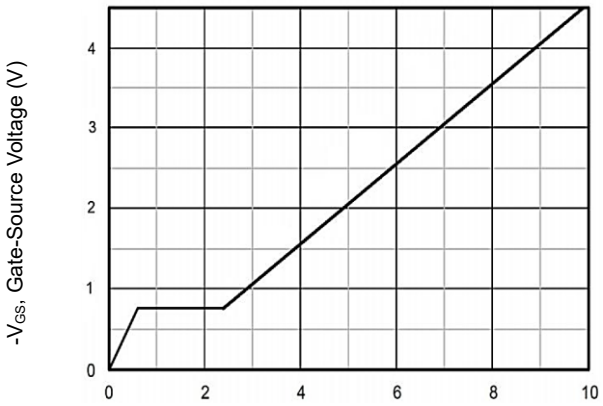
On Region Characteristics



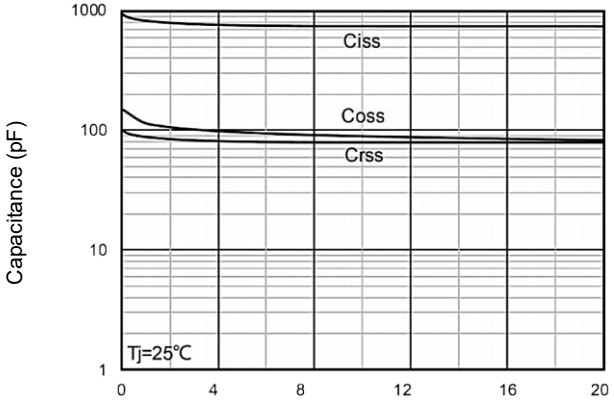
Transfer Characteristics



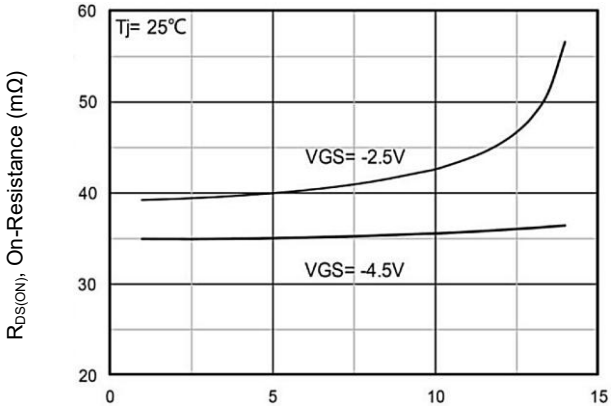
Gate Charge Characteristics



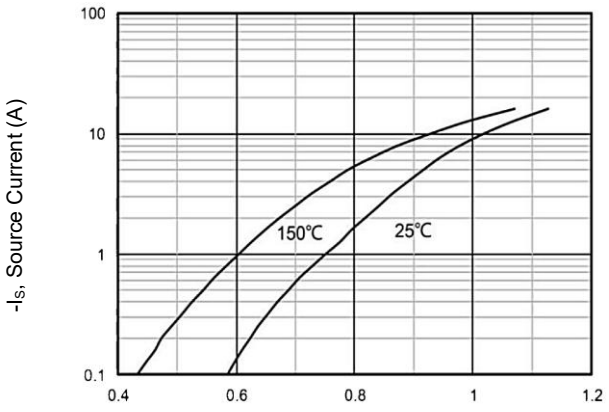
Capacitance vs. Drain-Source Voltage



On-Resistance vs. Drain Current



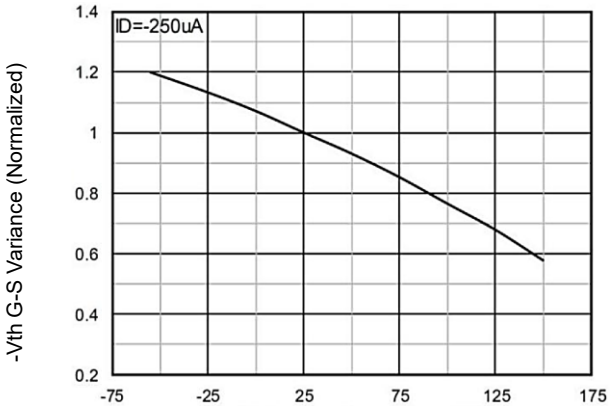
Body Diode Characteristics



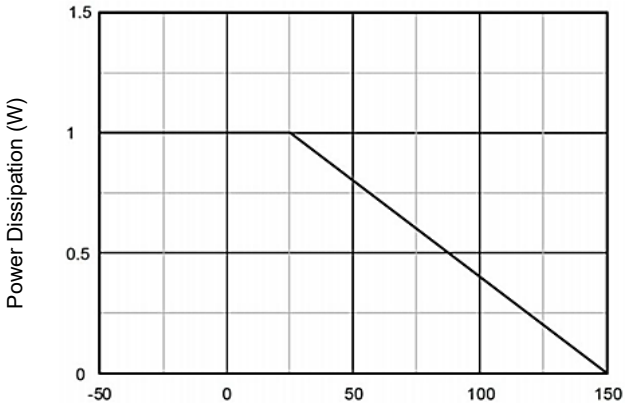
CHARACTERISTIC CURVES

Breakdown Voltage vs. Temperature

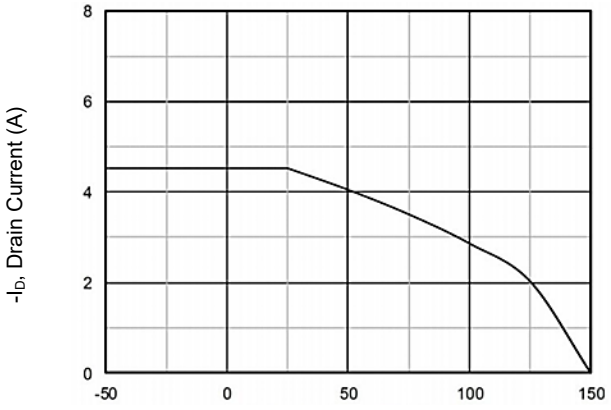
Threshold Voltage Variance vs. Temperature



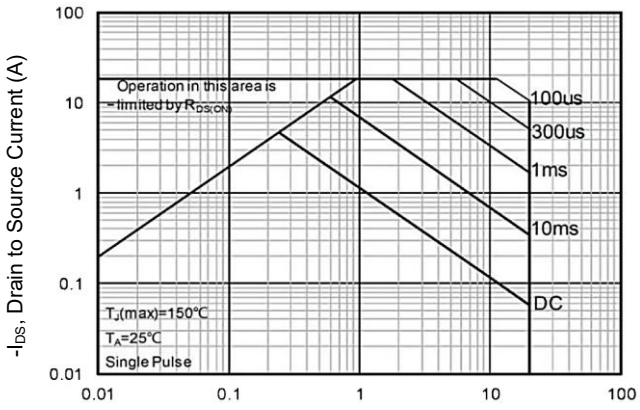
Power Dissipation



Current Dissipation



Maximum Safe Operating Area



Maximum Transient Thermal Impedance