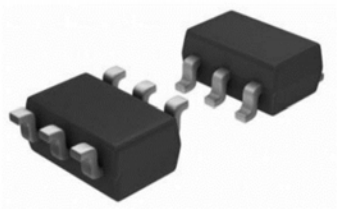
P-Channel MOSFET
20V 4.8A 2.0W TSOP-6

MFT2P4A8S236

MERITEK

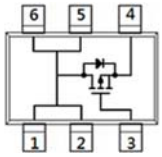
FEATURE

- $R_{DS(ON)}$ <55mΩ, V_{GS}= -4.5V, I_D=-4.8A
- $R_{DS(ON)}$ <75mΩ, V_{GS}= -2.5V, I_D=-3.6A
- High Dense Cell Design for Extremely Low $R_{DS(ON)}$
- Rugged and reliable



MECHANICAL DATA

- Case: TSOP-6 Package
- Terminals: Solderable per MIL-STD-750, Method 2026



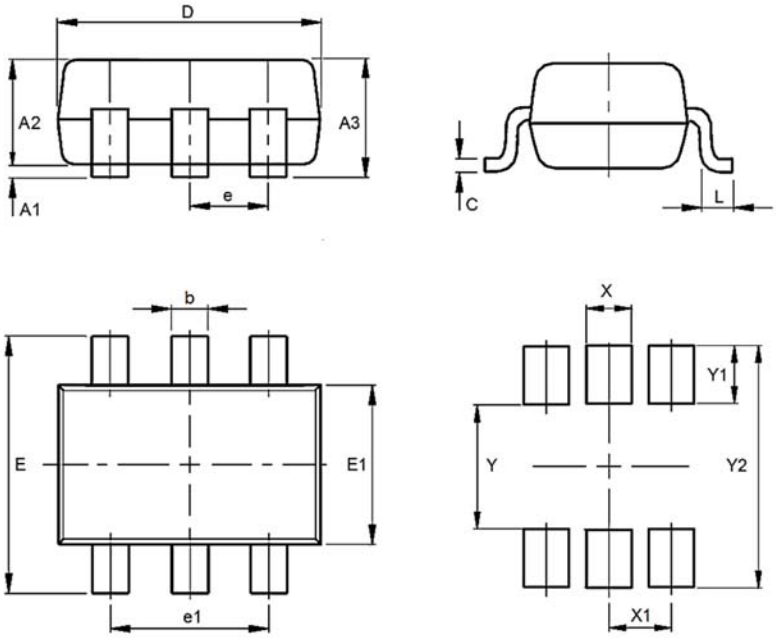
RoHS

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	-4.8	A
Drain Current – Pulsed	I_{DM}	-19.2	A
Power Dissipation	P_D	2.0	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	°C/W
Operating Junction and Storage Temperature	T_J ,T_{STG}	-55 to 150	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	--	0.10
A2	1.00	1.20
A3	1.00	1.30
b	0.30	0.50
c	0.08	0.20
D	2.70	3.10
E	2.60	3.00
E1	1.30	1.70
e	0.95	
e1	1.70	2.10
L	0.20	0.60
X	0.80	
X1	0.95	
Y	1.10	
Y1	0.90	
Y2	2.90	

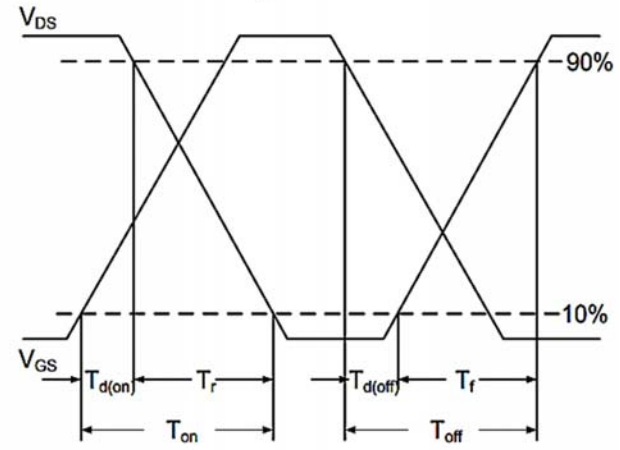


ELECTRICAL CHARACTERISTICS

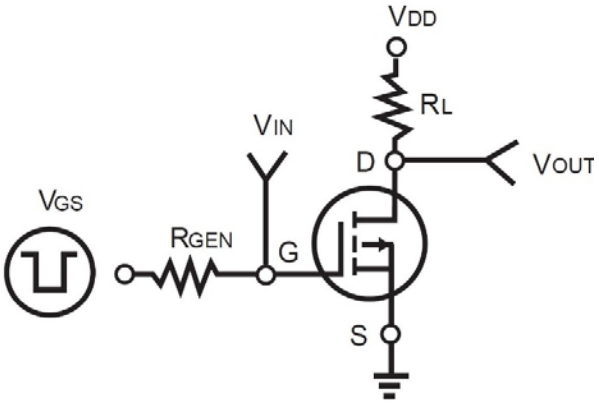
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	BV_{DSS}	-20	--	--	V
Drain-Source Leakage Current	V_{DS}= -16V, V_{GS}=0V	I_{DSS}	--	--	1	μA
Gate Leakage Current, Forward	V_{GS}=12V, V_{DS}=0V	I_{GSSF}	--	--	100	nA
Gate Leakage Current, Reverse	V_{GS}= -12V, V_{DS}=0V	I_{GSSR}	--	--	-100	
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}= -4.5V, I_D= -4.5A	$R_{DS(ON)}$	--	44	55	mΩ
	V_{GS}= -2.5V, I_D= -3.6A		--	55	75	
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D= -250μA	$V_{GS(th)}$	-0.4	--	-1	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=-10V, I_D=-3.8A V_{GS}=-4.5V	Q_g	--	7.0	--	nC
Gate-Source Charge		Q_{gs}	--	0.8	--	
Gate-Drain Charge		Q_{gd}	--	2.2	--	
Turn-On Delay Time	V_{DD}=-10V, I_D=-3.8A V_{GS}=-4.5V, R_G=3Ω,	$T_{d(on)}$	--	11	--	ns
Rise Time		T_r	--	6	--	
Turn-Off Delay Time		$T_{d(off)}$	--	28	--	
Fall Time		T_f	--	8	--	
Input Capacitance	V_{DS}=-10V, V_{GS}=0V, F=1MHz	C_{iss}	--	635	--	pF
Output Capacitance		C_{oss}	--	130	--	
Reverse Transfer Capacitance		C_{rss}	--	95	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Continuous Source Current	-	I_S	--	--	-1.3	A
Diode Forward Voltage	V_{GS}=0V, I_S=-1.0A	V_{SD}	--	--	-1.2	V

Note:
1. Pulse width ≤300us, Duty cycle ≤2%
2. Maximum current rating is package limited
3. Essentially independent of operating temperature typical characteristics
4. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$ = 150°C. Rating are based on low frequency and duty cycle to initial T_J=25°C

Switching Time Waveform

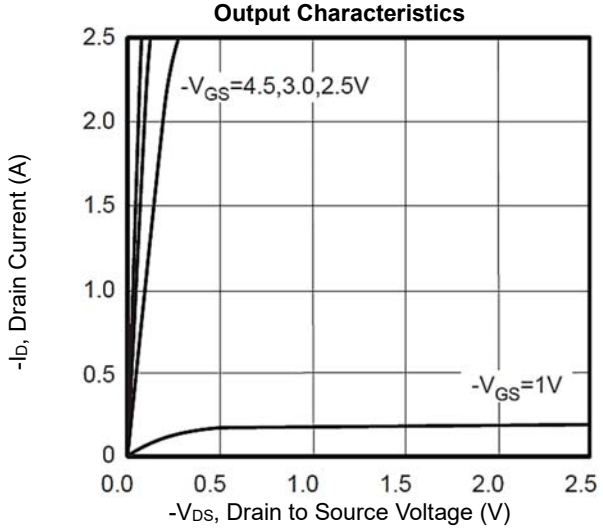


Switching Test Circuit

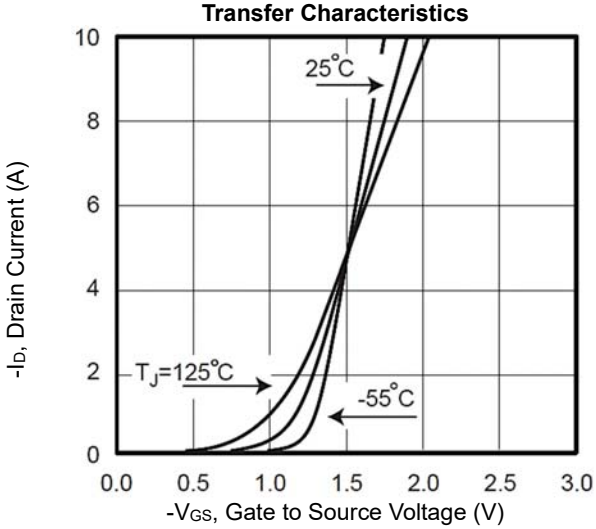


CHARACTERISTIC CURVES

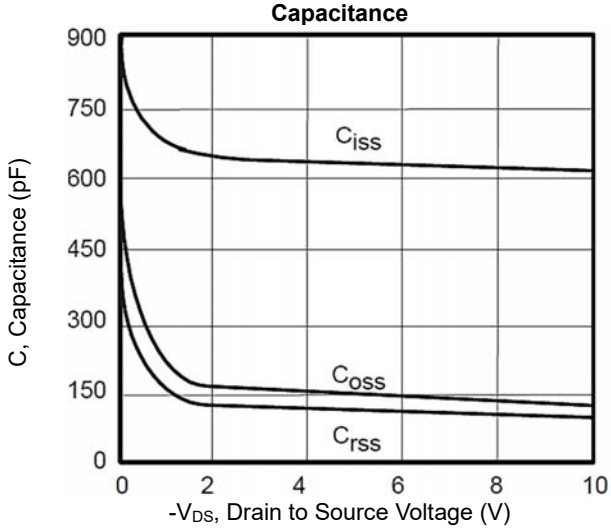
Output Characteristics



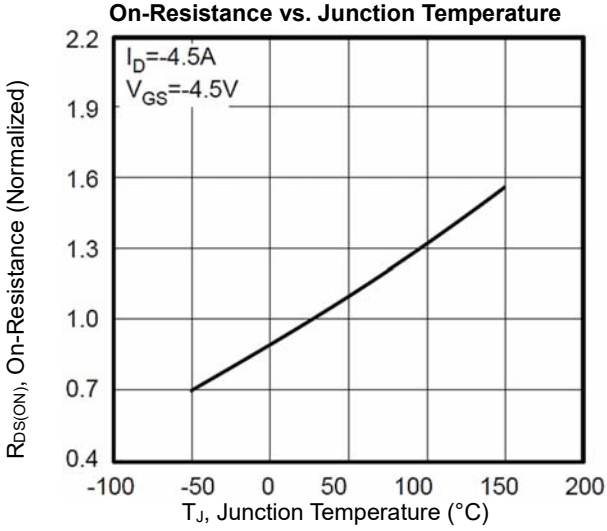
Transfer Characteristics



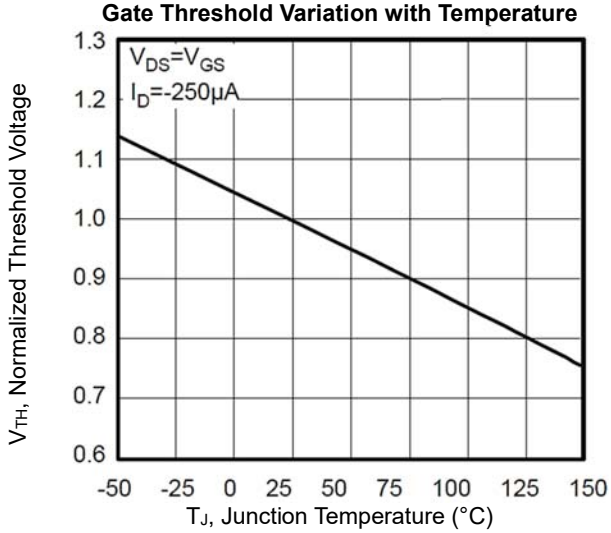
Capacitance



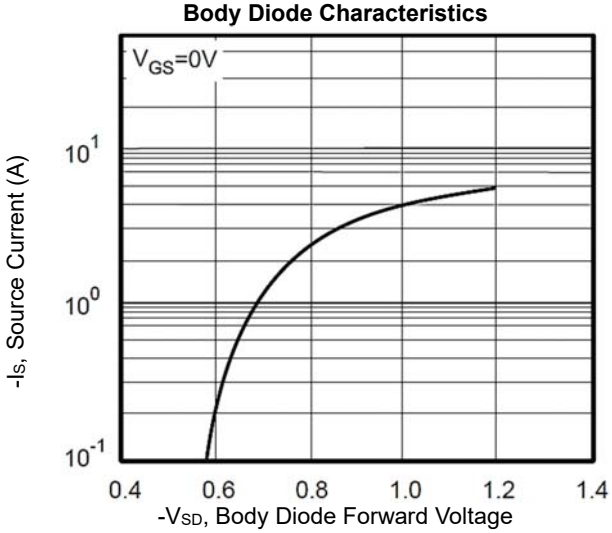
On-Resistance vs. Junction Temperature



Gate Threshold Variation with Temperature

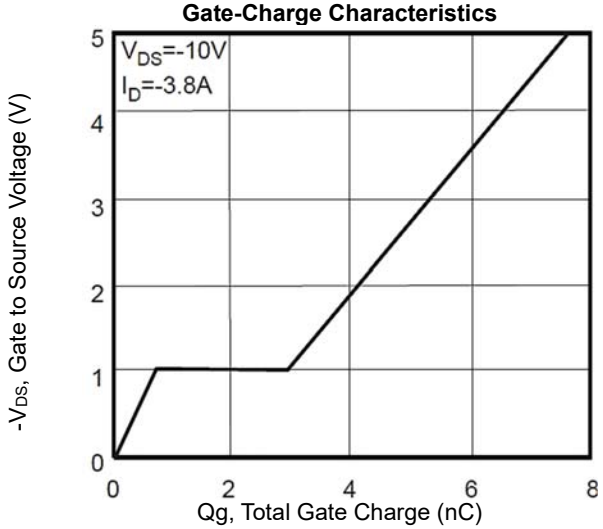


Body Diode Characteristics

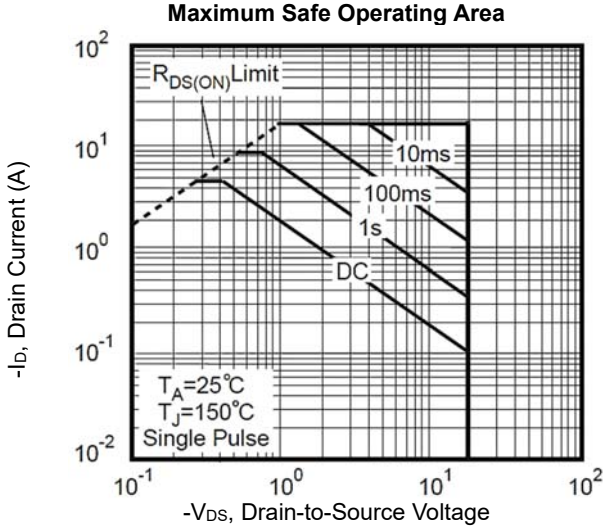


CHARACTERISTICS CURVES

Gate-Charge Characteristics



Maximum Safe Operating Area



Normalized Thermal Transient Impedance Curve