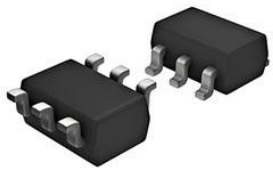
2P Channel MOSFET
20V 4.5A 1.5W SOT-23-6

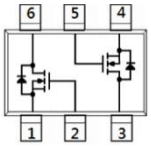
MFT22P4A5S236

MERITEK

FEATURE

- $R_{DS(ON)}$<60mΩ, V_{GS}=-4.5V, I_D=-4A
- $R_{DS(ON)}$<80mΩ, VGS=-2.5V, ID=-3A
- Advanced Trench Process Technology





RoHS

MECHANICAL DATA

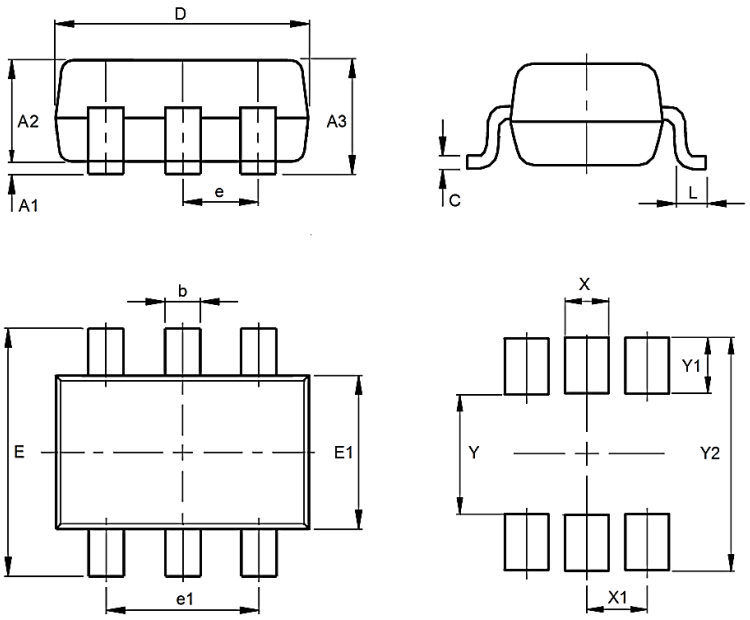
- Case: SOT-23-6 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

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}	-14	A
Power Dissipation	P_D	1.5	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	85	°C/W
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to +150	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.00	0.10
A2	1.05	1.15
A3	1.05	1.25
b	0.30	0.50
C	0.10	0.20
D	2.82	3.02
e	0.950 BSC.	
e1	1.80	2.00
E	1.50	1.70
E1	2.65	2.95
L	0.30	0.60
Y	1.60	
Y1	0.80	
Y2	3.20	
X	0.55	
X1	0.95	

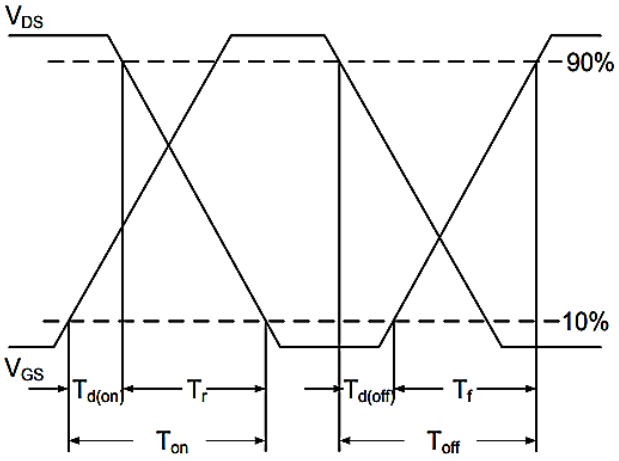


ELECTRICAL CHARACTERISTICS

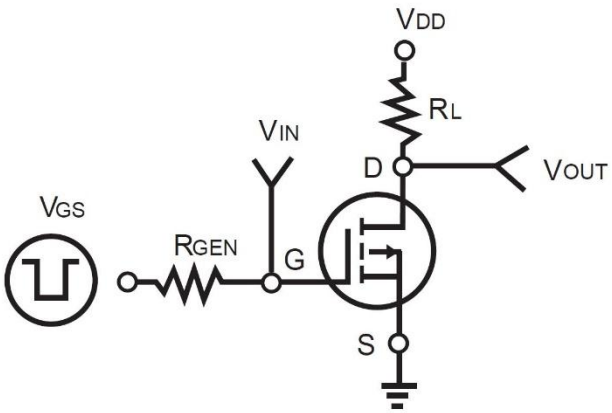
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	BV_{DSS}	-20	-	-	V
Drain-Source Leakage Current	V_{DS}=-20V, V_{GS}=0V,	I_{DSS}	-	-	-1	μA
Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=±12V	I_{GSS}	-	-	±100	μA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=-4.5V, I_D=-4A	$R_{DS(ON)}$	-	49	60	mΩ
	V_{GS}=-2.5V, I_D=-3A		-	64	80	
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=-250uA	$V_{GS(th)}$	-0.45	-0.6	-1.0	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-3A	Q_g	-	10.1	-	nC
Gate-Source Charge		Q_{gs}	-	1.21	-	
Gate-Drain Charge		Q_{gd}	-	2.46	-	
Turn-On Delay Time	V_{DD}=-10V, V_{GS}=-4.5V, R_G=3.3Ω I_D=-3A,	$T_{d(on)}$	-	5.6	-	nS
Rise Time		T_r	-	32.2	-	
Turn-Off Delay Time		$T_{d(off)}$	-	45.6	-	
Fall Time		T_f	-	29.2	-	
Input Capacitance	V_{DS}=-15V, V_{GS}=0V, F=1MHz	C_{iss}	-	677	-	pF
Output Capacitance		C_{oss}	-	82	-	
Reverse Transfer Capacitance		C_{rss}	-	73	-	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Current	V_D=V_G=0V, Force Current	I_S	-	-	-3	A
Diode Forward Voltage	V_{GS}=0V, I_S=-1A, T_J=25°C	V_{SD}	-	-0	-1	V

Note:
1. Pulse width≤ 300μs, duty cycle≤2%
2. Essentially independent of operating temperature typical characteristics
3. $R_{\theta JA}$ 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
4. Power dissipation is limited by 150°C junction temperature
5. Guaranteed by design, not test in mass production

Switching Time Waveform

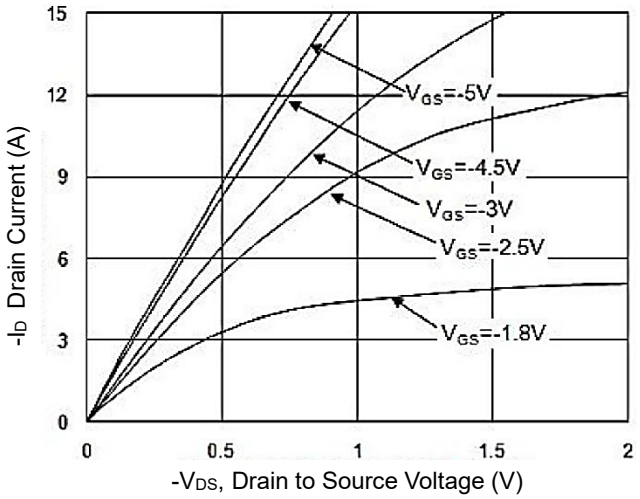


Switching Test Circuit

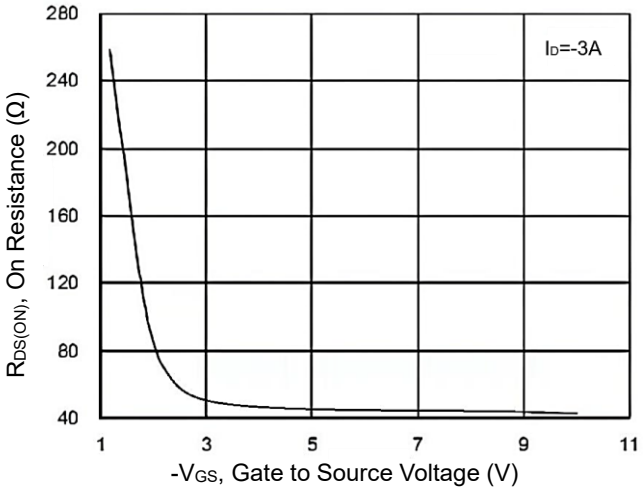


CHARACTERISTIC CURVES

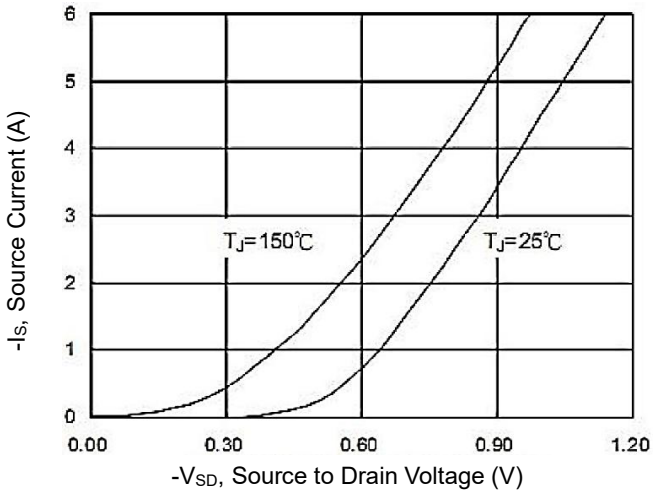
On-Region Characteristics



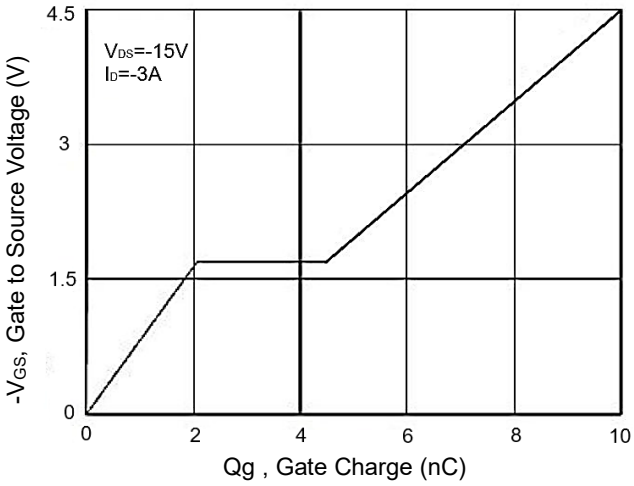
On-Resistance Variation with VGS



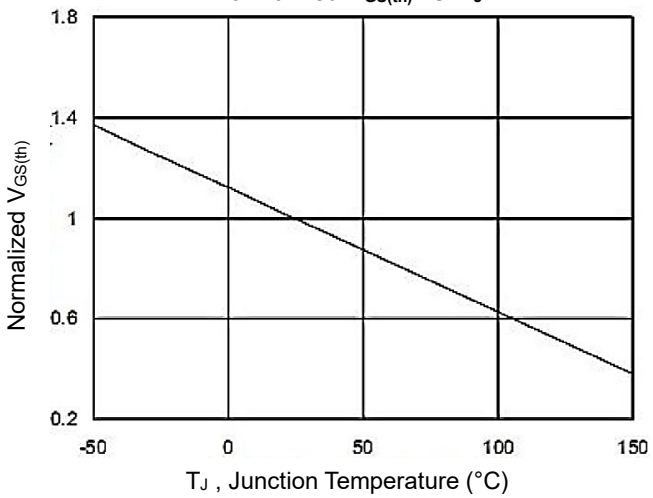
Forward Characteristics of Reverse



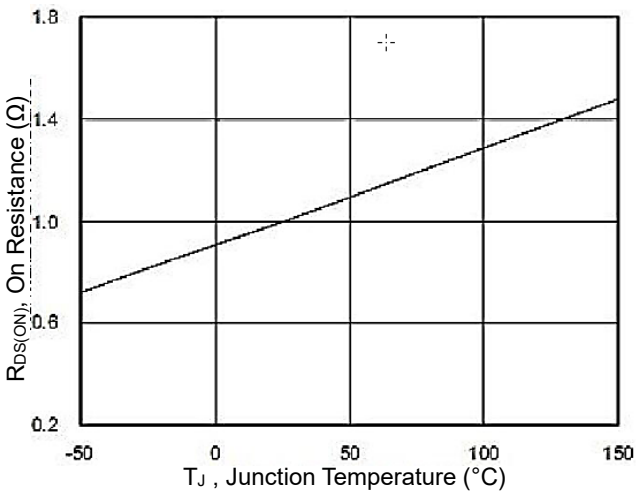
Gate Charge Waveform



Normalized $V_{GS(th)}$ vs. T_J

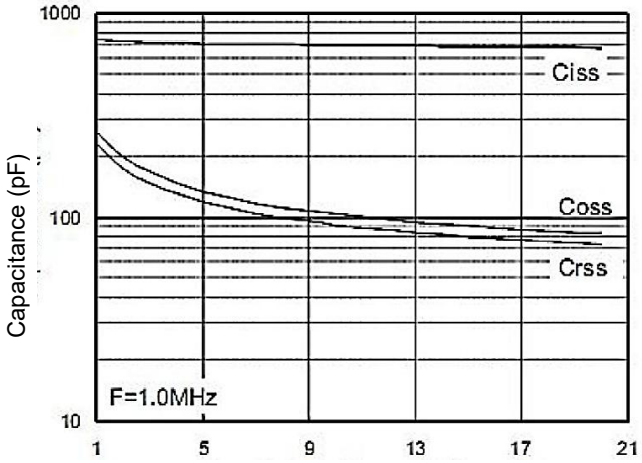


Normalized R_{DSON} vs. T_J

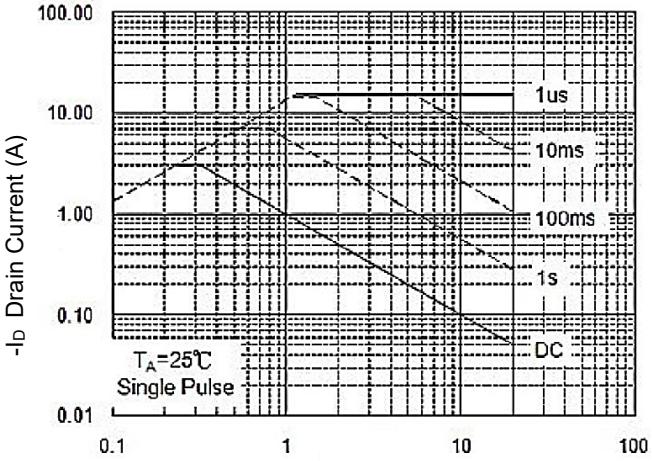


CHARACTERISTIC CURVES

Capacitance vs. Drain-Source Voltage



Safe Operating Area



Normalized Maximum Transient Thermal Impedance