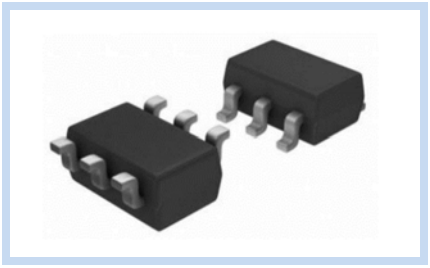
P-Channel MOSFET
20V 6.5A 2W SOT-23-6L

MFT2P6A5S236

MERITEK

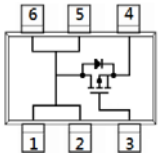
FEATURE

- $R_{DS(ON)}$<35mΩ, V_{GS}=-4.5V, I_D=-6.5A
- $R_{DS(ON)}$<40mΩ, V_{GS}=-2.5V, I_D=-4.6A
- $R_{DS(ON)}$<50mΩ, V_{GS}=-1.8V, I_D=-2.6A
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application,etc



MECHANICAL DATA

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



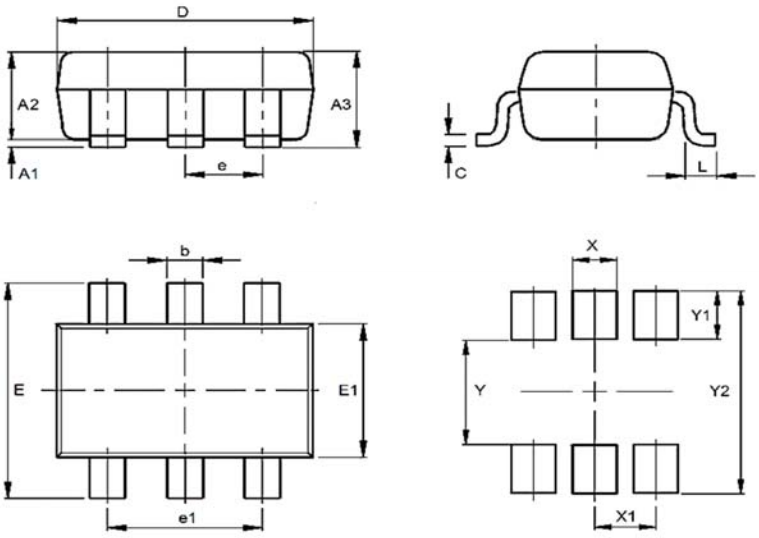
RoHS

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current		I_D	-6.5	A
Pulsed Drain Current		I_{DM}	-26	A
Power Dissipation	T_A= 25°C	P_D	2	W
	Derate above 25°C		16	mW /°C
Operating and Storage Temperature		T_J, T_{STG}	- 55 ~ +150	°C
Typical Thermal Junction to Ambient		$R_{\theta JA}$	62.5	°C/W

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	

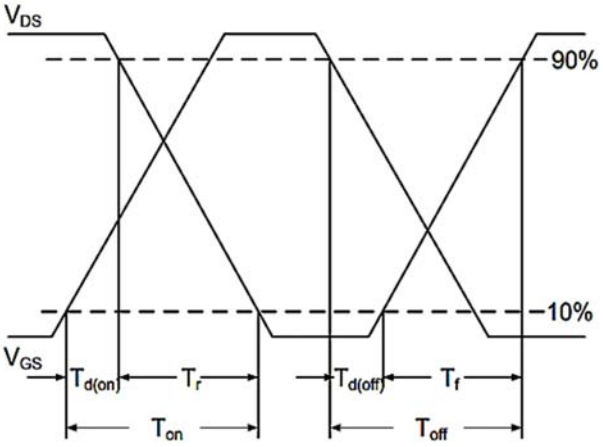


ELECTRICAL CHARACTERISTICS

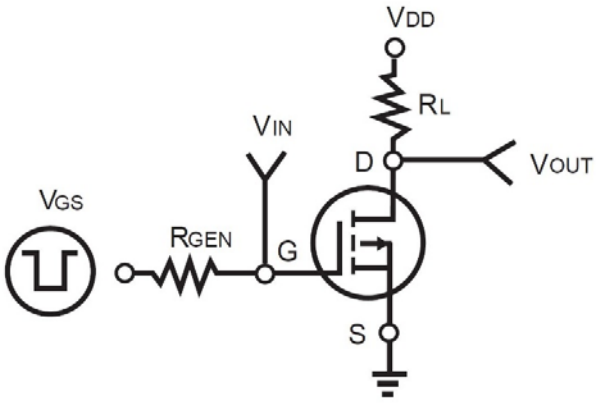
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}= 0V, I_D=-250uA	BV_{DSS}	-20	-	-	V
Zero Gate Voltage Drain Current	V_{GS}= 0V, V_{DS}=-20V	I_{DSS}	-	-0.01	-1	μA
Gate-Body Leakage Current	V_{GS}= ±8V, V_{DS}= 0V	I_{GSS}	-	±10	±100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain Source On-Resistance	V_{GS}=-4.5V, I_D=-6.5A	$R_{DS(ON)}$	-	29	35	mΩ
	V_{GS}=-2.5V, I_D=-4.6A		-	33	40	mΩ
	V_{GS}=-1.8V, I_D=-2.6A		-	40	50	mΩ
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=-250uA	$V_{GS(th)}$	-0.35	-0.59	-0.9	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{GS}=-4.5V,V_{DS}=-10V,I_D=-6.5A	Q_g	-	18.9	-	nC
Gate-Source Charge		Q_{gs}	-	2.8	-	
Gate-Drain Charge		Q_{gd}	-	4.2	-	
Input Capacitance	V_{GS}=0V, V_{DS}=-10V, f=1MHz	C_{iss}	-	1760	-	pF
Output Capacitance		C_{oss}	-	148	-	
Reverse Transfer Capacitance		C_{rss}	-	120	-	
Turn-On Delay Time	V_{GS}=-4.5V,V_{DS}=-10V, I_D=-6.5A, R_G= 6Ω	$t_{d(on)}$	-	12	-	ns
Rise Time		t_r	-	68	-	
Turn-Off Delay Time		$t_{d(off)}$	-	82	-	
Fall Time		t_f	-	35	-	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Maximum Continous Drain-Source Foward Current	-	I_S	-	-	-2.0	A
Diode Forward Voltage	V_{GS}= 0V, I_S= -1.0A	V_{SD}	-	-0.69	-1.2	V

Note:
1. Pulse width ≤ 300us, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.
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 1 inch FR-4 with 2oz. Square pad of copper.
4. The maximum current rating is package limited.
5. Guarantee by design,not test in mass production.

Switching Time Waveform

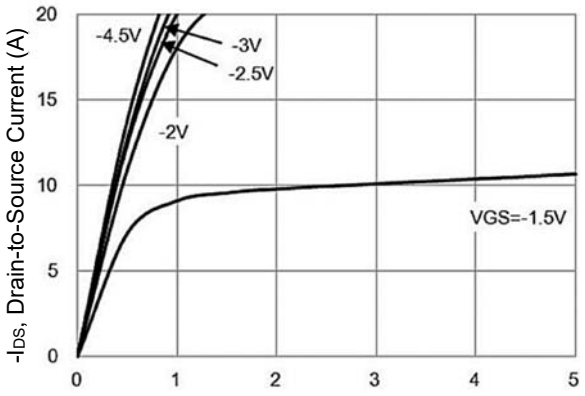


Switching Test Circuit



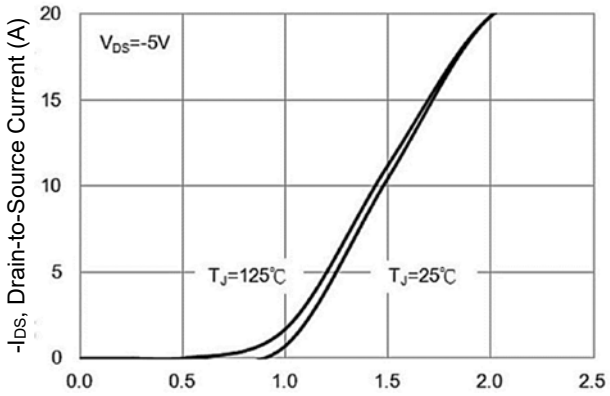
CHARACTERISTIC CURVES

Output Characteristics



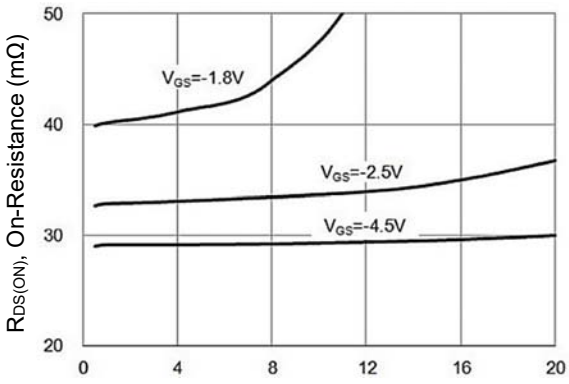
-V_{DS}, Drain-to-Source Voltage (V)

Transfer Characteristics



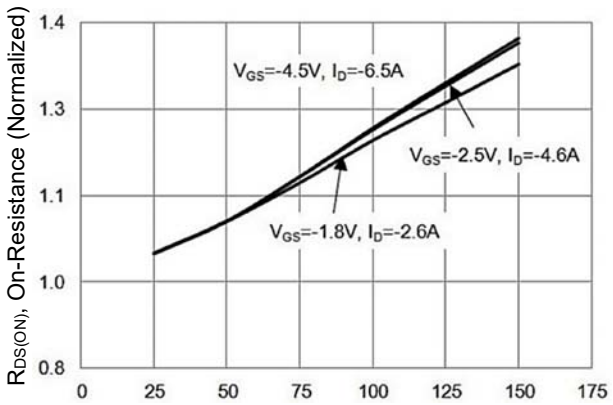
-V_{GS}, Gate-to-Source Voltage (V)

On-Resistance vs Drain Current



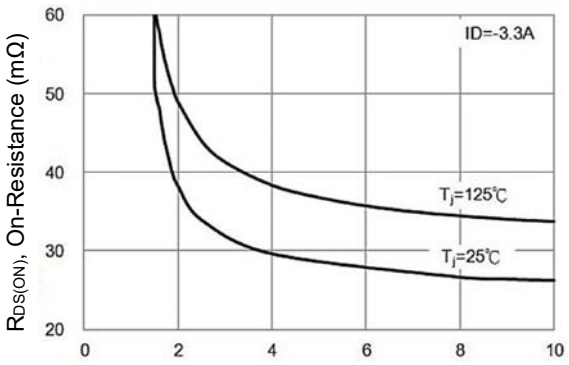
-I_{DS}, Drain-to-Source Current (A)

On-Resistance vs Junction Temperature



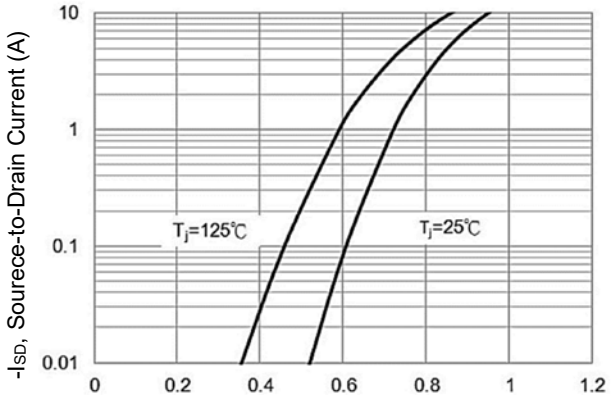
Temperature(°C)

On-Resistance Variation with VGS



-V_{GS}, Gate-to-Source Voltage (V)

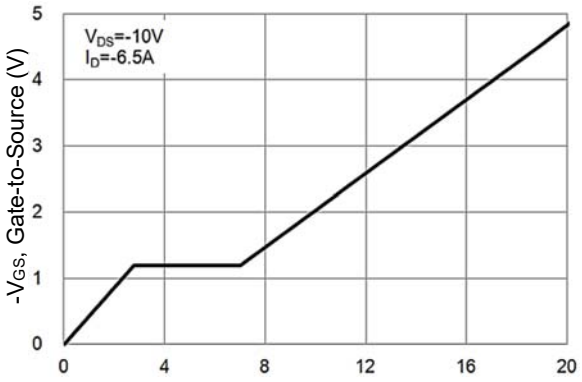
Body Diode Characteristics



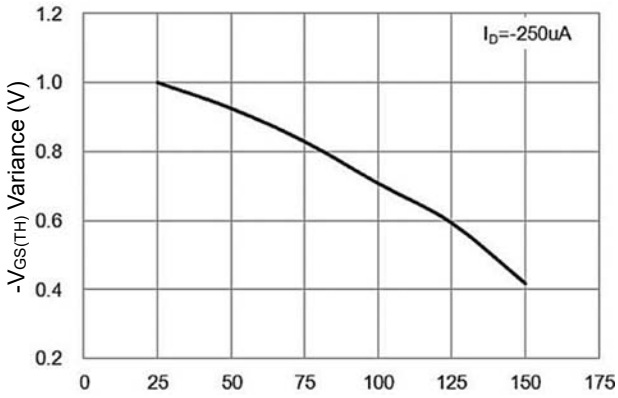
-V_{SD}, Source-to-Drain Voltage (V)

CHARACTERISTIC CURVES

Gate-Charge Characteristics



Thershold Voltage Variation with Temperature



Capacitance vs Drain-Source Voltage