

P-Channel MOSFET

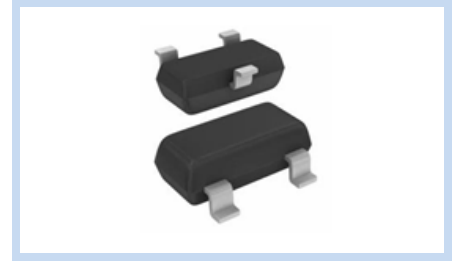
20V 4.5A SOT-23 AEC-Q101

MFT2P4A5S23EA

MERITEK

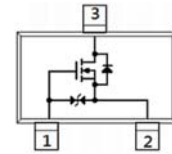
FEATURE

- $R_{DS(ON)} < 48m\Omega$, $V_{GS} = -4.5V$, $I_D = -4.5A$
- $R_{DS(ON)} < 60m\Omega$, $V_{GS} = -2.5V$, $I_D = -3A$
- $R_{DS(ON)} < 88m\Omega$, $V_{GS} = -1.8V$, $I_D = -1.5A$
- Advanced Trench Process Technology
- Application: Switch Load, PWM Application, etc.
- ESD Protected 2KV HBM
- AEC-Q101 Qualified



MECHANICAL DATA

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

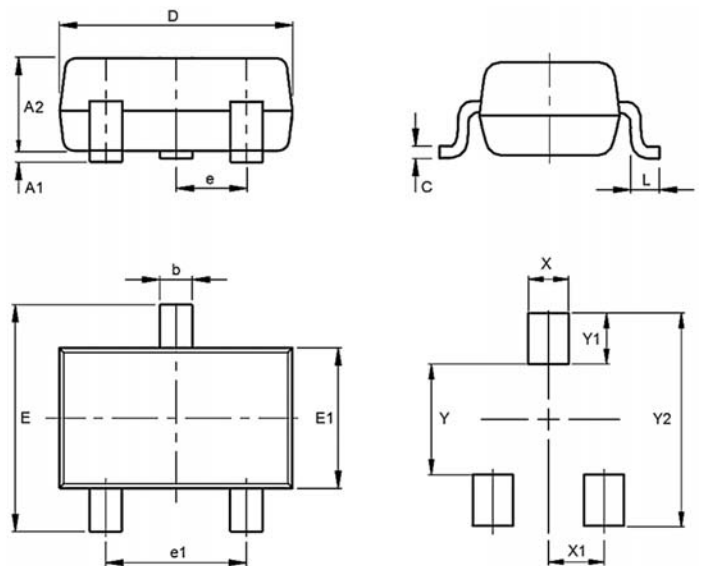


MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 8	V
Drain Current – Continuous	$T_A = 25^\circ C$	I_D	-4.3	A
Drain Current – Pulsed		I_{DM}	-17.2	A
Power Dissipation	$T_A = 25^\circ C$	P_D	1.25	W
	Derate above $25^\circ C$		10	mW/ $^\circ C$
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	100	$^\circ C/W$
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to 150	$^\circ C$

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.00	0.10
A2	0.90	1.10
b	0.35	0.50
C	0.08	0.20
D	2.80	3.04
e	0.90	1.00
e1	1.80	2.00
E	2.20	2.60
E1	1.20	1.40
L	0.15	
X	0.80	
X1	0.95	
Y	1.10	
Y1	0.90	
Y2	2.90	



P-Channel MOSFET

20V 4.5A SOT-23 AEC-Q101

MFT2P4A5S23EA

MERITEK

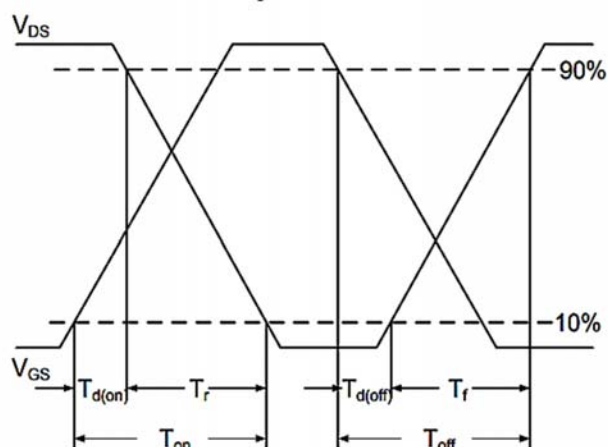
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-20	--	--	V
Drain-Source Leakage Current	$V_{DS}=-20V, V_{GS}=0V$	I_{DSS}	--	--	-1	μA
Gate-Source Leakage Current	$V_{GS}=\pm 8V, V_{DS}=0V$	I_{GSS}	--	--	± 10	μA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=-4.5V, I_D=-4.3A$	$R_{DS(on)}$	--	44	52	m Ω
	$V_{GS}=-2.5V, I_D=-3.0A$		--	53	60	
	$V_{GS}=-1.8V, I_D=-1.5A$		--	70	80	
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	$V_{GS(th)}$	-0.4	-0.72	-1.0	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-4.3A$	Q_g	--	24	--	nC
Gate-Source Charge		Q_{gs}	--	1.5	--	
Gate-Drain Charge		Q_{gd}	--	2.5	--	
Turn-On Delay Time	$V_{DD}=-10V, V_{GS}=-4.5V, R_G=6\Omega, I_D=-4.3A$	$T_{d(on)}$	--	45	--	ns
Rise Time		T_r	--	79	--	
Turn-Off Delay Time		$T_{d(off)}$	--	193	--	
Fall Time		T_f	--	826	--	
Input Capacitance	$V_{DS}=-10V, V_{GS}=0V, F=1MHz$	C_{iss}	--	907	--	pF
Output Capacitance		C_{oss}	--	90	--	
Reverse Transfer Capacitance		C_{rss}	--	70	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Continuous Source Current	$V_G=V_D=0V$, Force Current	I_S	--	--	-1.5	A
Diode Forward Voltage	$V_{GS}=0V, I_S=-1.0A$	V_{SD}	--	-0.76	-1.2	V

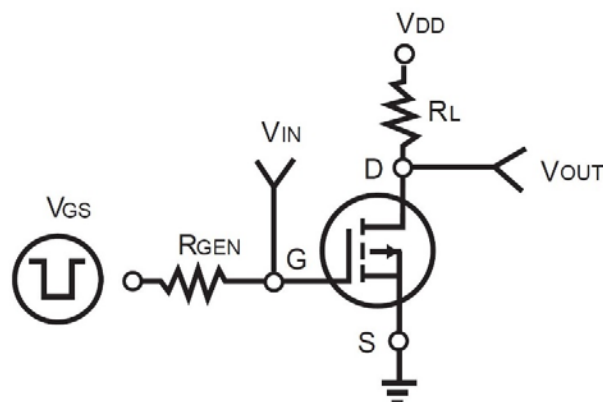
Note:

1. Pulse widths $\leq 300\mu s$, Duty cycles $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics
3. Maximum current rating is package limited
4. $R_{\theta JA}$ 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 inch² with 2oz square pad of copper.
5. Guaranteed by design, not subject to production testing.

Switching Time Waveform



Switching Test Circuit



P-Channel MOSFET

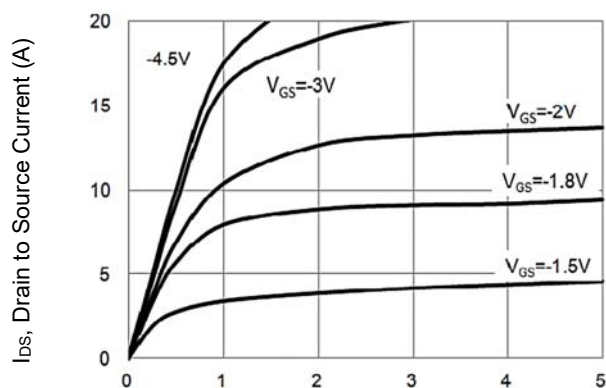
20V 4.5A SOT-23 AEC-Q101

MFT2P4A5S23EA

MERITEK

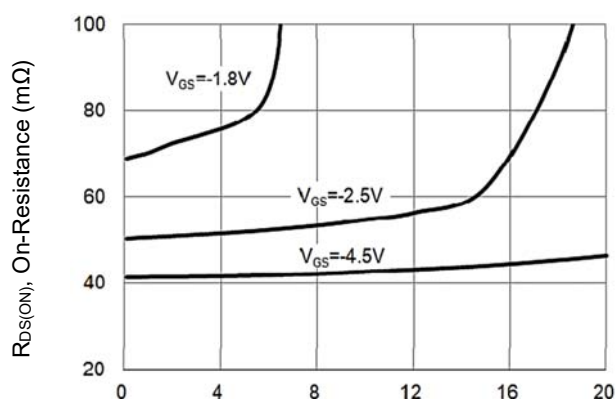
CHARACTERISTIC CURVES

On-Region Characteristics



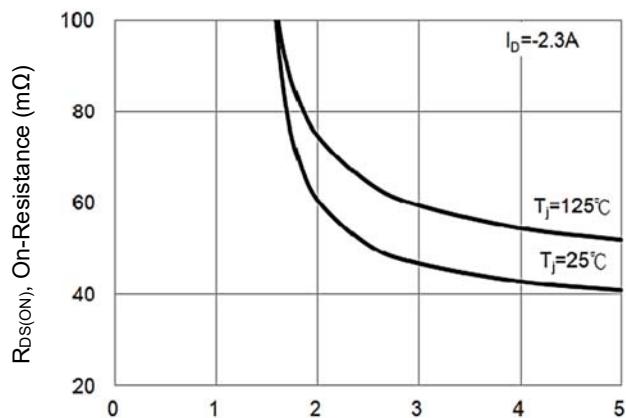
V_{DS} , Drain to Source Voltage (V)

On-Resistance vs. Drain Current



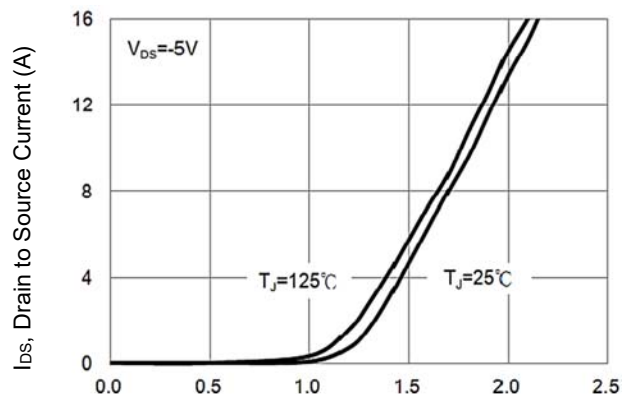
I_{DS} , Drain to Source Current (A)

On-Resistance Variation with V_{GS}



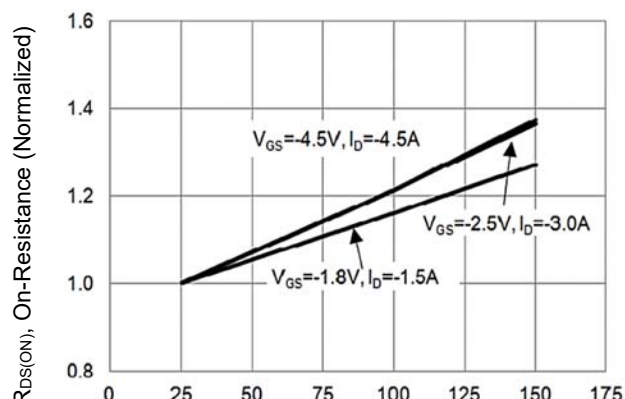
V_{GS} , Gate to Source Voltage (V)

Transfer Characteristics



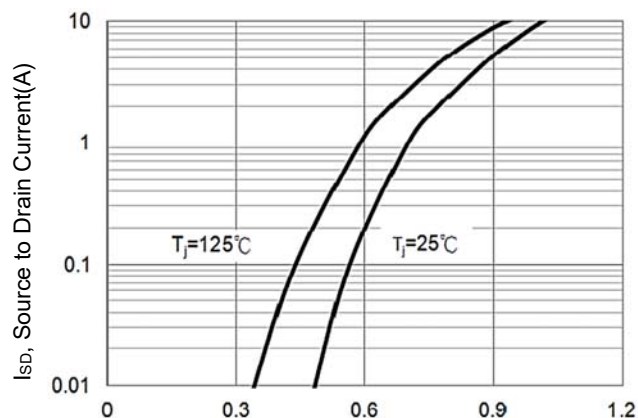
V_{GS} , Gate to Source Voltage (V)

On-Resistance vs. Junction Temperature



T_J , Junction Temperature (°C)

Bode Diode Characteristics



T_J , Junction Temperature (°C)

P-Channel MOSFET

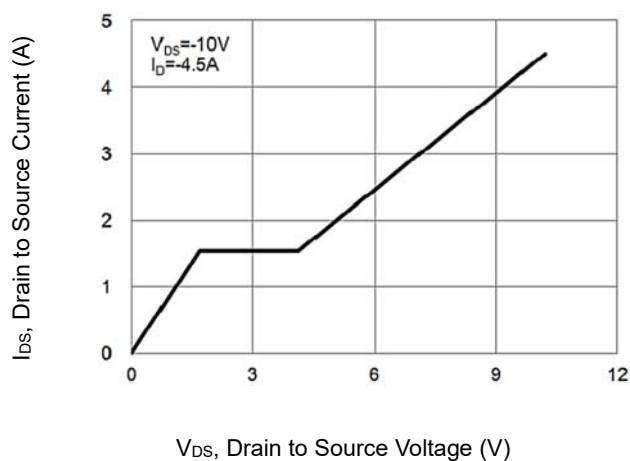
20V 4.5A SOT-23 AEC-Q101

MFT2P4A5S23EA

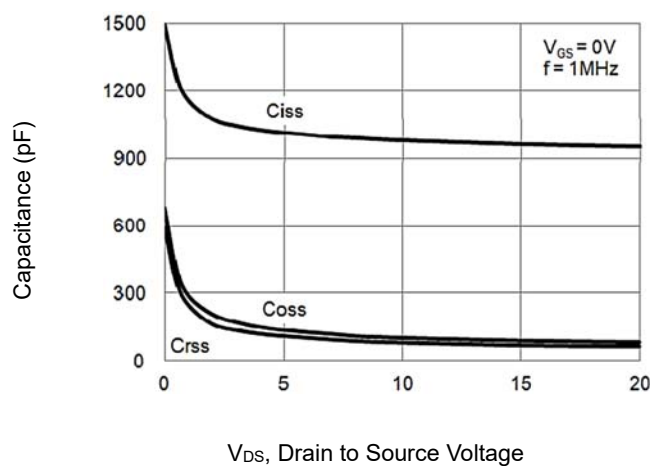
MERITEK

CHARACTERISTICS CURVES

Gate-Charge Characteristics



Capacitance vs. Drain to Source Voltage



Threshold Voltage Variation with Temperature

