

N-Channel MOSFET

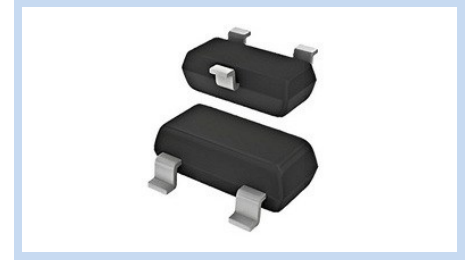
20V 2.3A 0.77W SOT-23

MFT2N2A3S23

MERITEK

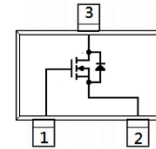
FEATURES

- $R_{DS(ON)} \leq 65m\Omega$ at $V_{GS}=4.5V$
- $R_{DS(ON)} \leq 90m\Omega$ at $V_{GS}=2.5$
- Low $R_{DS(ON)}$ Reduces Power Loss and Heat
- Low Gate Charge Enables Low Driving Power
- Fast Switching times for improved Efficiency



APPLICATIONS

- Overcurrent and Discharge Protection in Battery Circuit
- Efficient switching for Backup Power Supply, UPS
- Voltage Regulators and Load Sharing in Power Management
- Load Switching in Power gating for Embedded and IoT Systems
- Fast Switching times for improved Efficiency

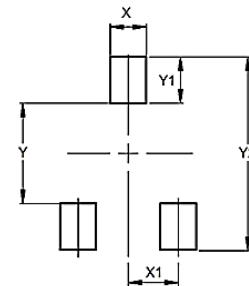
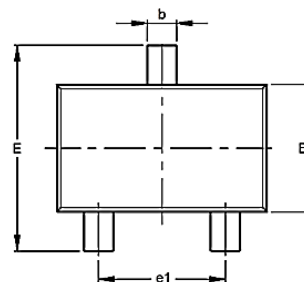
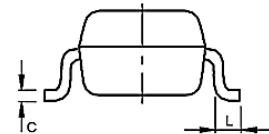
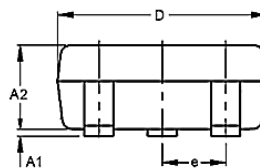


MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 12	V
Drain Current – Continuous	$V_{GS}=4.5V, T_A=25^\circ C$	I_D	2.3	A
	$V_{GS}=4.5V, T_A=70^\circ C$		1.2	
Drain Current – Pulsed		I_{DM}	6.9	A
Power Dissipation	$T_A=25^\circ C$	P_D	0.77	W
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	125	$^\circ C/W$
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ C$

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
e	0.95 TYP	
e1	1.80	2.00
E	2.25	2.55
E1	1.20	1.40
L	0.30	0.50
X	0.80	
X1	0.95	
Y	1.00	
Y1	1.00	
Y2	3.00	



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ELECTRICAL CHARACTERISTICS

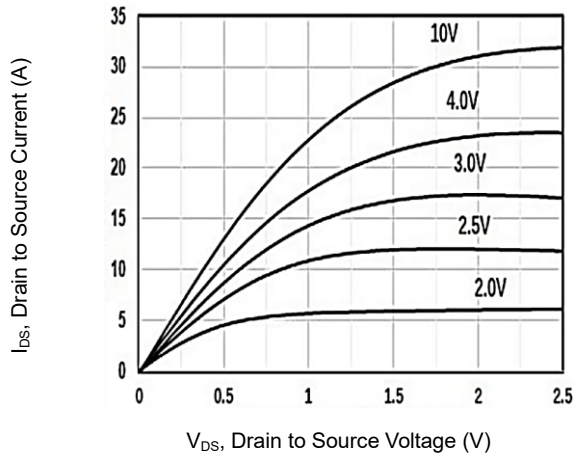
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	20	--	--	V
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	0.5	0.65	1.2	V
Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	I_{DSS}	--	--	1	μA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=3A$	$R_{DS(ON)}$	--	52	65	m Ω
	$V_{GS}=2.5V, I_D=2A$		--	75	90	
Dynamic Characteristics	Conditions	Symbol	--	Typ.	Max	Unit
Input Capacitance	$V_{DS}=10V, V_{GS}=0V, F=1MHz$	C_{iss}	--	150	--	pF
Output Capacitance		C_{oss}	--	34	--	
Reverse Transfer Capacitance		C_{rss}	--	26	--	
Turn-On Delay Time	$V_{DS}=10V, I_D=3A, V_{GS}=4.5V, R_G=3\Omega$	$T_{d(on)}$	--	6.8	--	nS
Rise Time		T_r	--	57	--	
Turn-Off Delay Time		$T_{d(off)}$	--	14	--	
Fall Time		T_f	--	53	--	
Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V, I_D=3A$	Q_g	--	2.4	--	nC
Gate-Source Charge		Q_{gs}	--	0.88	--	
Gate-Drain Charge		Q_{gd}	--	0.77	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Current	--	I_S	--	--	2.3	A
Diode Forward Voltage	$I_S=3A, V_{GS}=0V$	V_{SD}	--	--	1.3	V

Note:

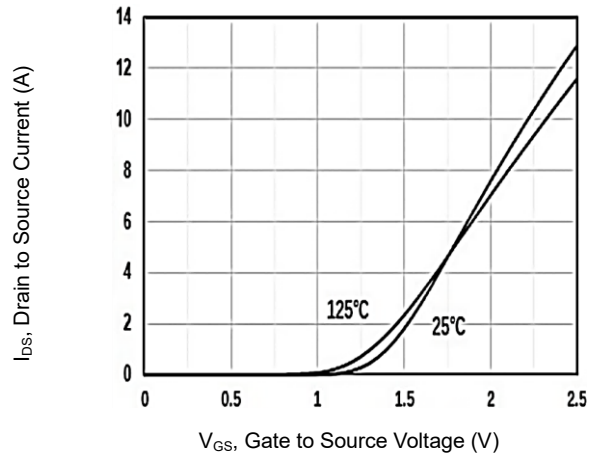
1. $T_C=25^\circ C$, unless otherwise noted.
2. Device mounted on a FR-4 substrate PC board, 2oz copper, with 1 inch² copper plate.
3. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.
4. The power dissipation is limited by $150^\circ C$ junction temperature.

CHARACTERISTIC CURVES

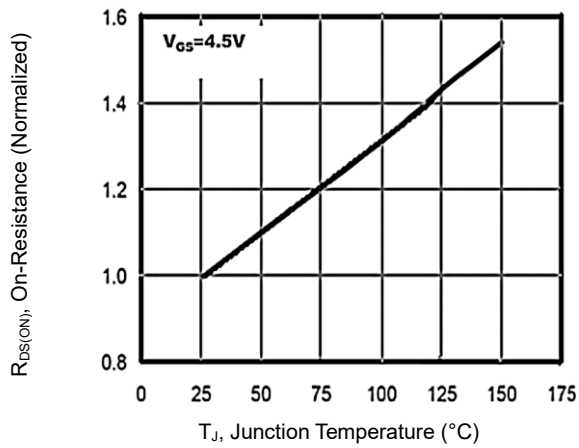
Output Characteristics



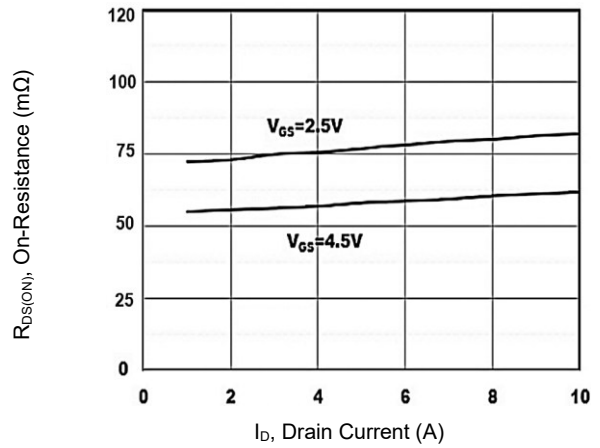
Transfer Characteristics



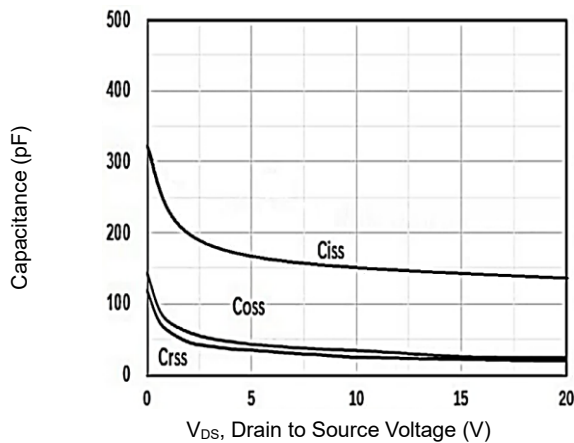
On-Resistance vs. Temperature



On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge Characteristics

