

N-Channel MOSFET

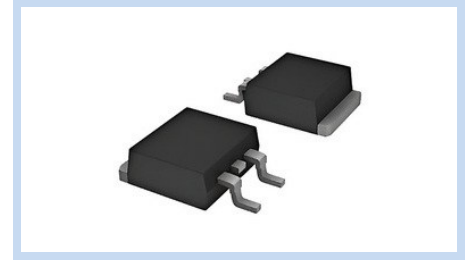
250V 18A 54W TO-252

MFT25N18T252

MERITEK

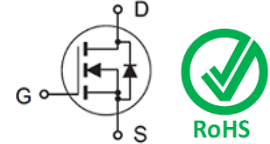
FEATURES

- $R_{DS(ON)} \leq 0.24\Omega$ at $V_{GS}=4.5V$
- Low $R_{DS(ON)}$ Reduces Power Loss and Heat
- Low Gate Charge Enables Low Driving Power
- Fast Switching times for improved Efficiency
- High Power and Current Handling Capability



APPLICATIONS

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



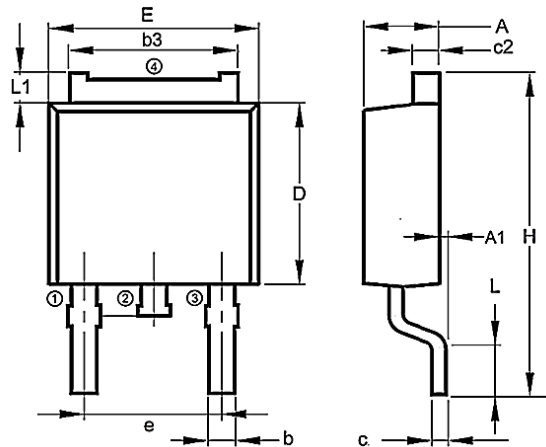
MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	250	V
Gate-Source Voltage		V_{GS}	± 30	V
Drain Current – Continuous	$T_A=25^\circ\text{C}$	I_D	18	A
	$T_A=100^\circ\text{C}$		10.8	
Drain Current – Pulsed		I_{DM}	36	A
Power Dissipation	$T_A=25^\circ\text{C}$	P_D	54	W
Single Pulsed Avalanche Current		I_{AS}	3.6	A
Single Pulse Avalanche Energy		E_{AS}	194	A
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	110	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

DIMENSIONS

Item	Min. (mm)	Max. (mm)
A	2.20	2.55
A1	0.00	0.15
b	0.50	0.70
b3	5.20	5.40
c	0.46	0.66
c2	0.46	0.66
D	5.30	5.70
E	6.30	6.70
e	4.60 TYP	
H	9.40	10.40
L	1.40	1.77
L1	1.50	1.75

Note: 1: Gate, 2, 4: Drain, 3: Source



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ELECTRICAL CHARACTERISTICS

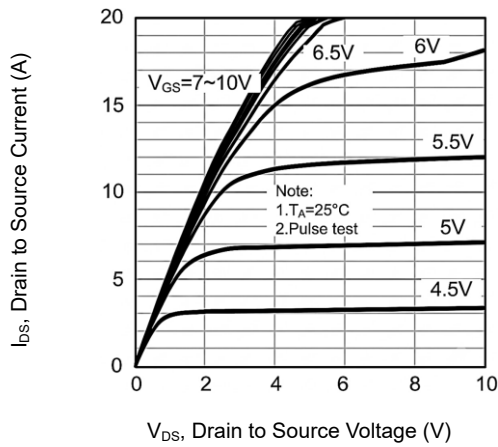
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	250	--	--	V
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	2.0	--	4.0	V
Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 30V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=250V, V_{GS}=0V$	I_{DSS}	--	--	10	μA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=9A$	$R_{DS(ON)}$	--	--	0.24	Ω
Dynamic Characteristics	Conditions	Symbol	--	Typ.	Max	Unit
Input Capacitance	$V_{DS}=25V, V_{GS}=0V, F=1MHz$	C_{iss}	--	870	--	pF
Output Capacitance		C_{oss}	--	135	--	
Reverse Transfer Capacitance		C_{rss}	--	8.8	--	
Turn-On Delay Time	$V_{DS}=100V, I_D=18A,$ $V_{GS}=10V, R_G=25\Omega$	$T_{d(on)}$	--	9	--	nS
Rise Time		T_r	--	18	--	
Turn-Off Delay Time		$T_{d(off)}$	--	55	--	
Fall Time		T_f	--	22	--	
Total Gate Charge	$V_{DS}=200V, V_{GS}=10V,$ $I_D=18A, I_G=1mA$	Q_g	--	24	--	nC
Gate-Source Charge		Q_{gs}	--	8.2	--	
Gate-Drain Charge		Q_{gd}	--	7	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Current	--	I_S	--	--	18	A
Maximum Diode Forward Current	--	I_{SM}	--	--	36	A
Diode Forward Voltage	$V_{GS}=0V, I_S=-18A$	V_{SD}	--	--	1.4	V
Reverse Recovery Time	$I_S=18A, di/dt=100A/\mu s$	t_{rr}	--	160	--	nS
Reverse Recovery Charge		Q_{rr}	--	0.9	--	μC

Note:

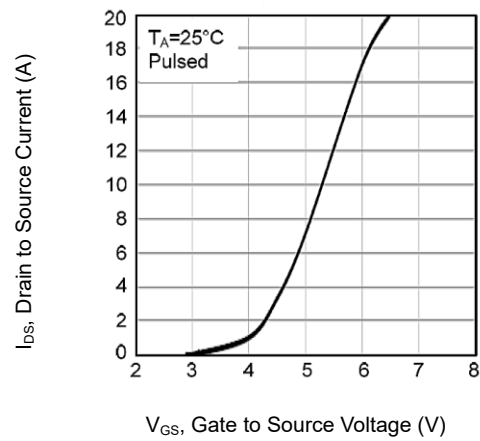
1. Pulse width $\leq 300\mu s$, Duty cycles $\leq 2\%$.
2. Essentially independent of operating temperature

CHARACTERISTIC CURVES

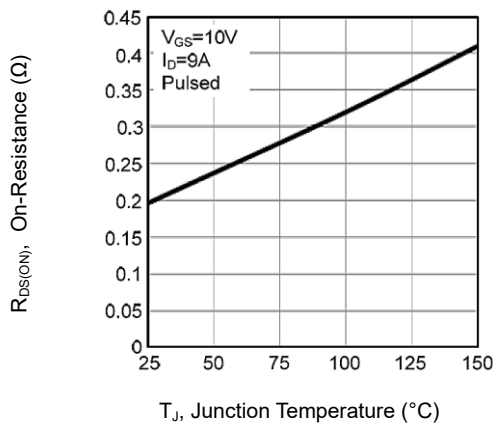
Output Characteristics



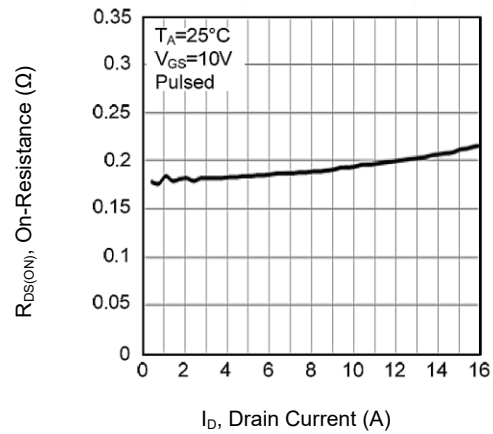
Transfer Characteristics



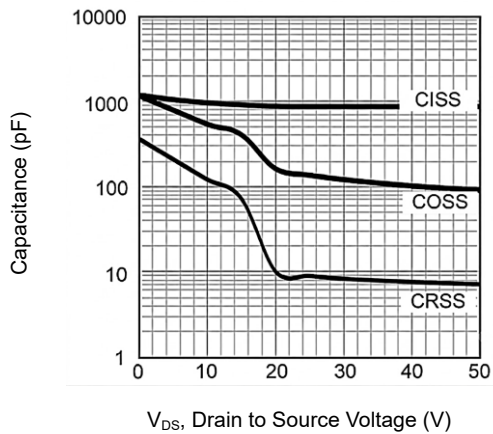
On-Resistance vs. Temperature



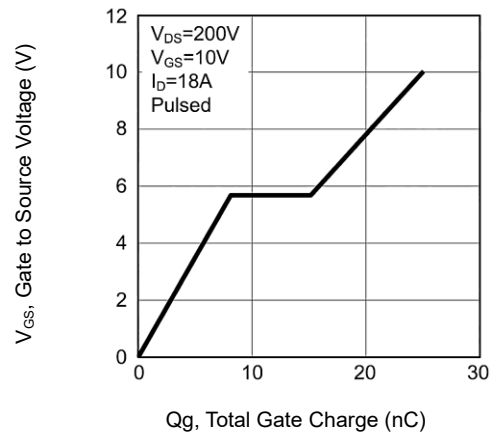
On-Resistance vs. Drain Current



Capacitance

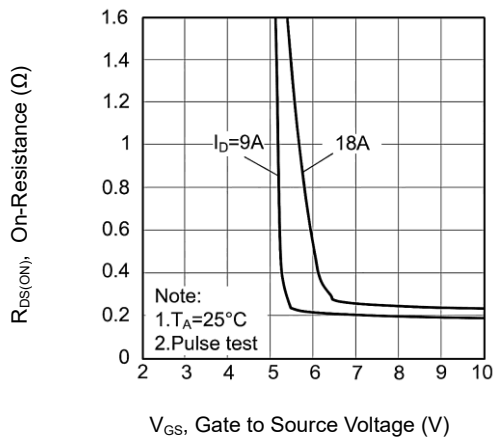


Gate Charge Characteristics

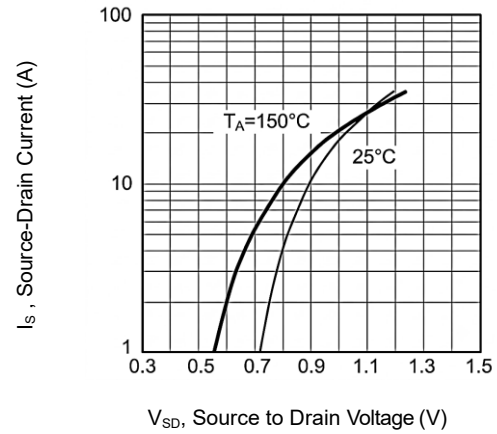


CHARACTERISTIC CURVES

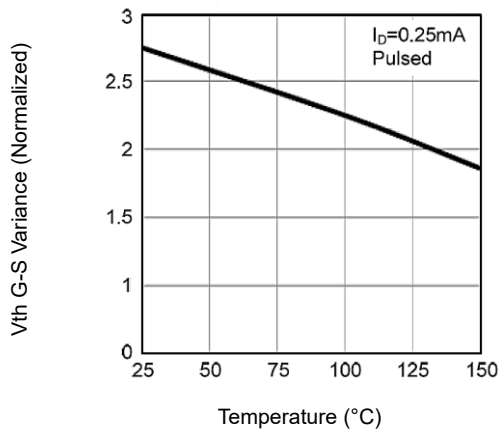
On-Resistance vs. Drain Current



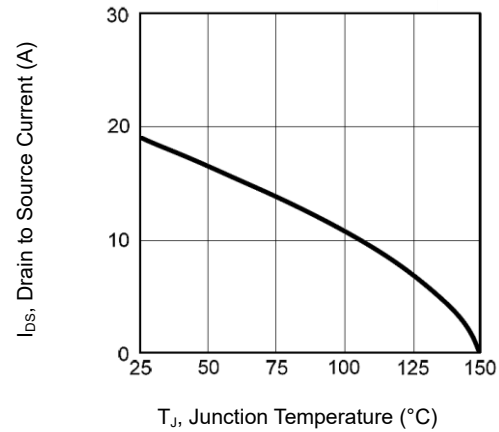
Source-Drain Diode Forward Voltage



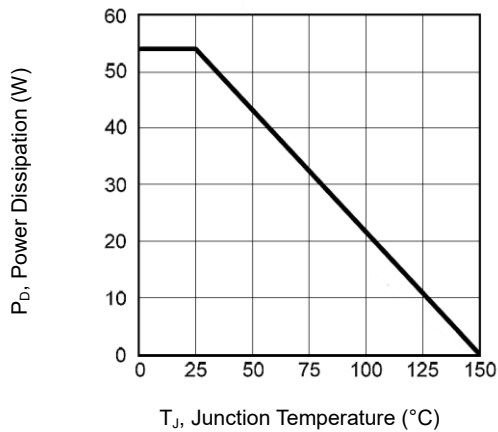
Threshold Voltage Variance vs. Temperature



Drain Current vs. Junction Temperature



Power Dissipation vs. Junction Temperature



Maximum Safe Operating Area

