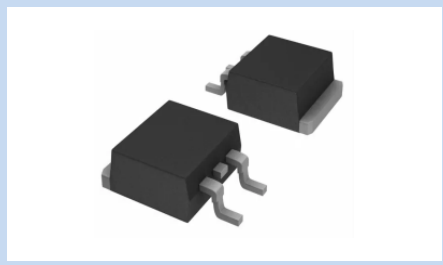
N-Channel MOSFET
60V 48A 107W TO-252

MFT6N48T252

MERITEK

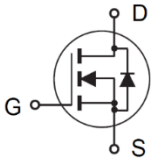
FEATURE

- $R_{DS(ON)}$<24mΩ, V_{GS}=10V, I_D=24A
- $R_{DS(ON)}$<29mΩ, V_{GS}=5V, I_D=12A
- High Power and Current Handing Capability
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$



MECHANICAL DATA

- Case: TO-252 Package
- Terminals: Solderable per MIL-STD-750, Method 2026



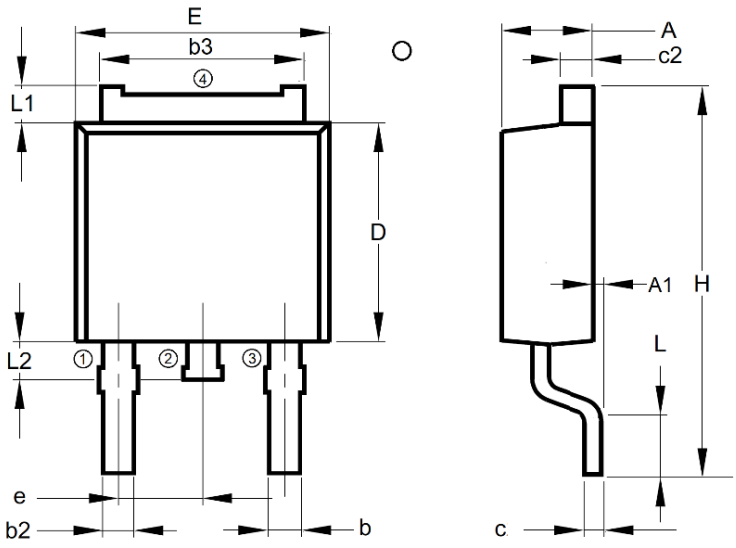
RoHS

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±16	V
Drain Current – Continuous	T_C=25°C	I_D	48	A
Drain Current – Pulsed		I_{DM}	192	A
Power Dissipation	T_C=25°C	P_D	107	W
	Derate above 25°C		0.7	W/°C
Single Pulse Avalanche Energy		E_{AS}	167.5	mJ
Single Pulse Avalanche Current		I_{AS}	42	A
Thermal Resistance Junction to Case		$R_{\theta JC}$	1.4	°C/W
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to 175	°C

DIMENSIONS

Item	Min. (mm)	Max. (mm)
A	2.20	2.40
A1	--	0.13
b	0.50	0.90
b2	0.76	1.14
b3	4.95	5.59
c	0.40	0.61
c2	0.45	0.89
D	5.40	6.63
E	6.05	7.10
e	1.98	2.59
H	8.80	10.60
L	0.25	--
L1	0.70	1.78
L2	0.50	1.20



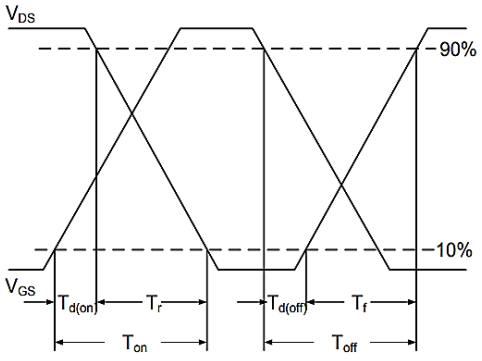
Note: 1: Gate, 2, 4: Drain, 3: Source

ELECTRICAL CHARACTERISTICS

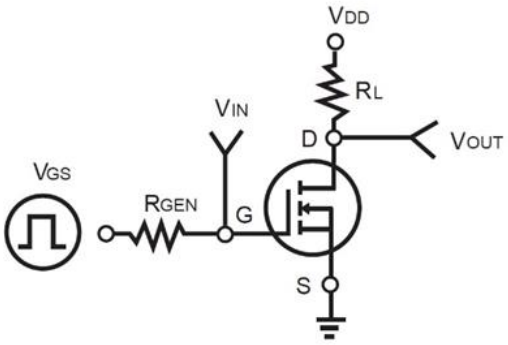
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	BV_{DSS}	60	--	--	V
Drain-Source Leakage Current	V_{DS}=60V, V_{GS}=0V	I_{DSS}	--	--	1	μA
Gate-Source Leakage Current	V_{GS}=±16V, V_{DS}=0V	I_{GSS}	--	--	±100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=24A	$R_{DS(ON)}$	--	19	24	mΩ
	V_{GS}=5V, I_D=12A		--	22.5	29	mΩ
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	$V_{GS(th)}$	1	--	2	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=48V, V_{GS}=4.5V, I_D=20A	Q_g	--	21	--	nC
Gate-Source Charge		Q_{gs}	--	3	--	nC
Gate-Drain Charge		Q_{gd}	--	14	--	nC
Turn-On Delay Time	V_{DD}=30V, V_{GS}=5V, R_G=15Ω I_D=48A	$T_{d(on)}$	--	28	--	ns
Rise Time		T_r	--	30	--	ns
Turn-Off Delay Time		$T_{d(off)}$	--	63	--	ns
Fall Time		T_f	--	22	--	ns
Input Capacitance	V_{DS}=25V, V_{GS}=0V, F=1MHz	C_{iss}	--	1290	--	pF
Output Capacitance		C_{oss}	--	320	--	pF
Reverse Transfer Capacitance		C_{rss}	--	70	--	pF
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Drain-Source Diode Forward Current	--	I_S	--	--	48	A
Diode Forward Voltage	V_{GS}=0V, I_S=24A, T_J=25°C	V_{SD}	--	--	1.2	V

Note:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
3. Guaranteed by design, not subject to production testing.
4. L=0.19mH I_{AS}=42A,V_{DD}=50V, R_G=25Ω

Switching Time Waveform

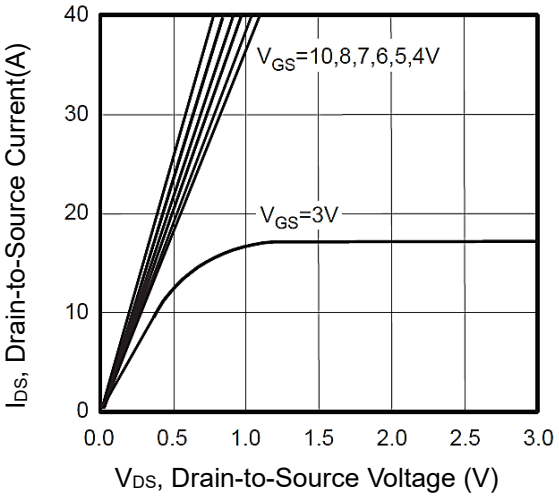


Switching Test Circuit

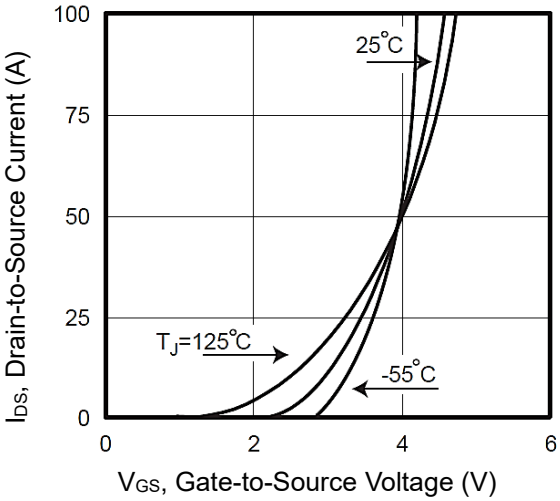


CHARACTERISTIC CURVES

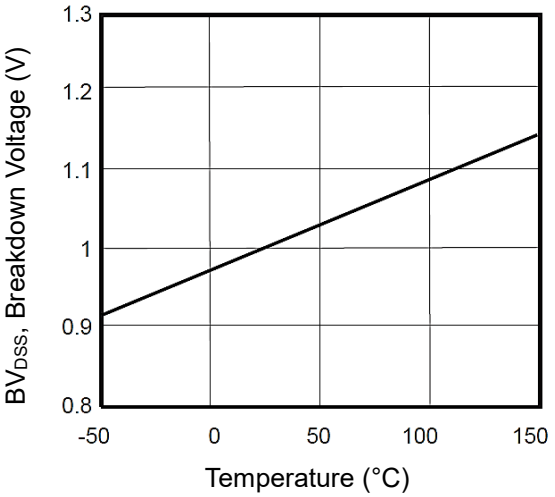
Output Characteristics



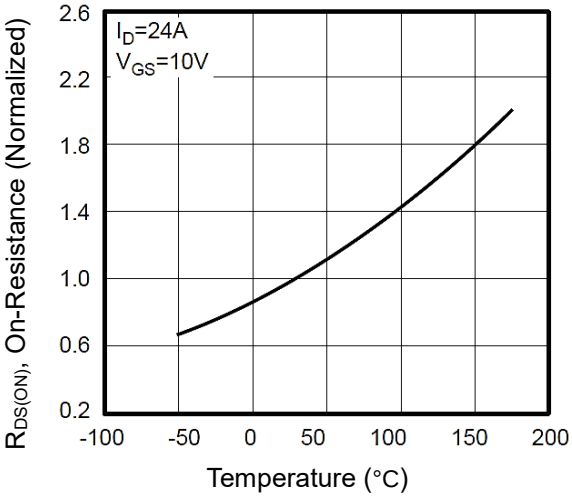
Transfer Characteristics



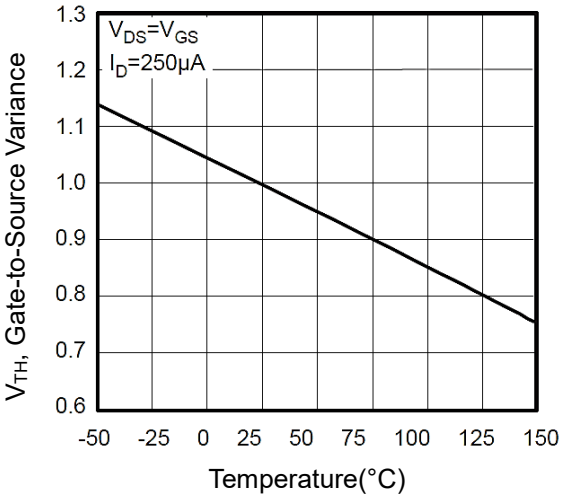
Breakdown Voltage vs. Temperature



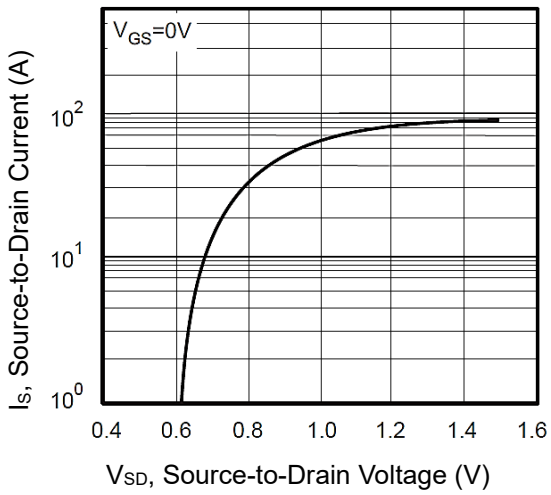
On-Resistance vs. Junction temperature



Threshold Voltage Variation with Temperature

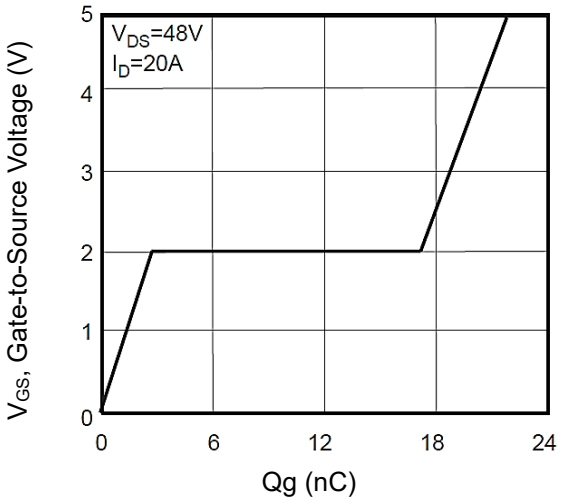


Body Diode Characteristics

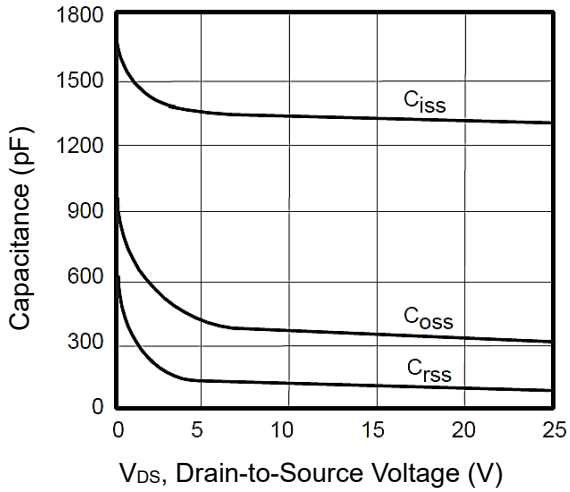


CHARACTERISTIC CURVES

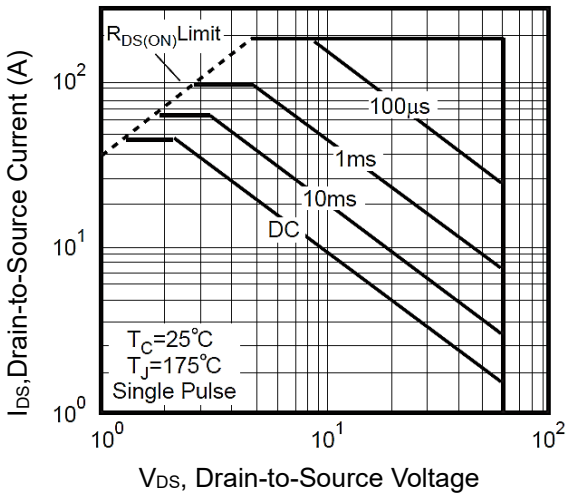
Gate-Charge Characteristics



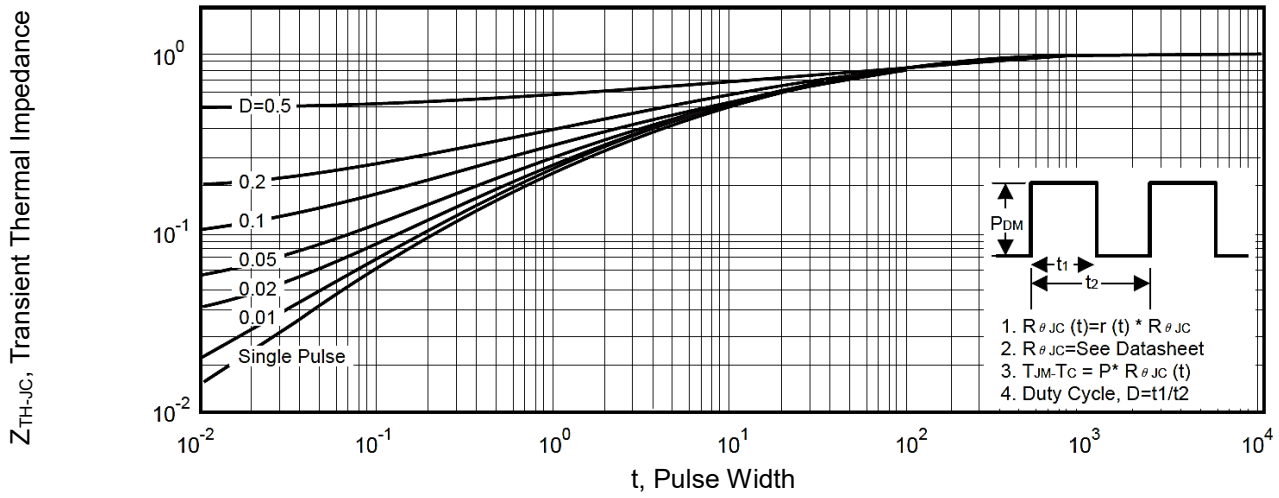
Capacitance vs. Drain-Source Voltage



Maximum Safe Operating Area



Normalized Transient Thermal Impedance vs Pulse Width



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