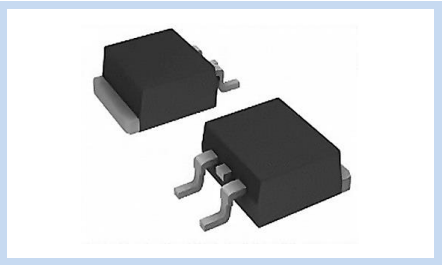
N-Channel MOSFET
600V 4A 83W TO-252

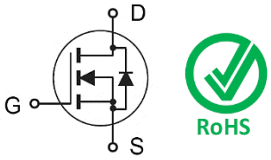
MFT60N4A0T252

MERITEK

FEATURE



- $R_{DS(ON)}$<2.5Ω at V_{GS}=10V, I_D=2A
- Fast Switching Capability
- High Ruggedness
- Low Gate Charge
- Application: High Speed Switching, Power Supplies and Adaptors



MECHANICAL DATA

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

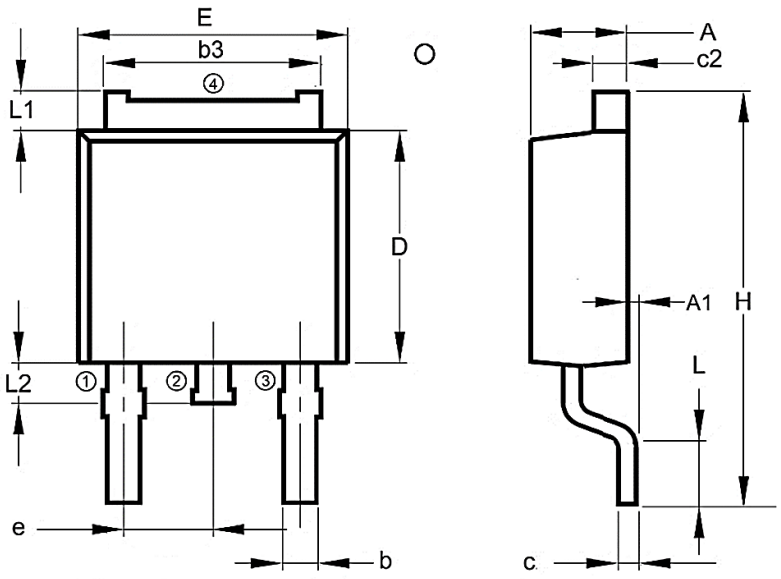
MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	±30	V
Drain Current – Continuous	T_C=25°C	I_D	4	A
	T_C=100°C		2.5	
Drain Current – Pulsed		I_{DM}	16	A
Power Dissipation	T_C=25°C	P_D	83	W
Single Pulse Avalanche Energy		E_{AS}	173	mJ
Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	1.5	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

DIMENSIONS

Item	Min. (mm)	Max. (mm)
A	2.10	2.50
A1	--	0.23
b	0.66	0.86
b3	5.13	5.53
c	0.45	0.55
c2	0.41	0.61
D	5.90	6.30
E	6.30	6.70
e	2.30	
H	9.30	10.60
L	1.00	1.75
L1	0.80	1.20
L2	0.60	1.00

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

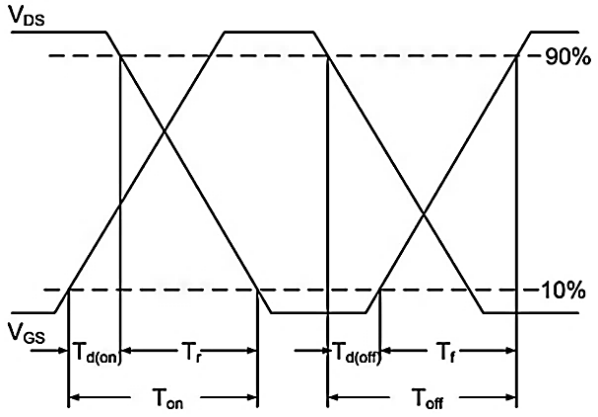


ELECTRICAL CHARACTERISTICS

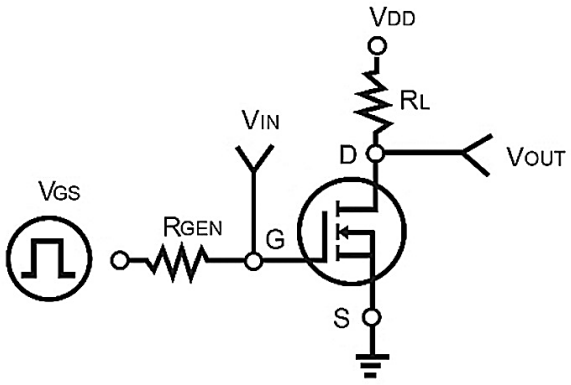
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	BV_{DSS}	600	--	--	V
Zero Gate Voltage Drain Current	V_{DS}=600V, V_{GS}=0V	I_{DSS}	--	--	1	μA
Gate-Source Leakage Current	V_{GS}=±30V, V_{DS}=0V	I_{GSS}	--	--	±100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=2A	$R_{DS(ON)}$	--	2.1	2.5	Ω
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	$V_{GS(th)}$	2.0	--	4.0	V
Transconductance	V_{DS}=25V, I_D=5A	g_{FS}	--	4.3	--	S
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Gate Resistance	V_{DS}=0V, f=1MHz	R_g	--	1.1	--	Ω
Total Gate Charge	V_{DS}=480V, V_{GS}=10V, I_D=4A	Q_g	--	12	--	nC
Gate-Source Charge		Q_{gs}	--	4.0	--	
Gate-Drain Charge		Q_{gd}	--	4.8	--	
Turn-On Delay Time	V_{DS}=300V, R_G=25Ω, I_D=4A	$T_{d(on)}$	--	30	--	ns
Rise Time		T_r	--	75	--	
Turn-Off Delay Time		$T_{d(off)}$	--	60	--	
Fall Time		T_f	--	55	--	
Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	C_{iss}	--	564	--	pF
Output Capacitance		C_{oss}	--	66	--	
Reverse Transfer Capacitance		C_{rss}	--	12	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Current	--	I_S	--	--	4	A
Diode Forward Voltage	V_{GS}=0V, I_{SD}=4A	V_{SD}	--	--	1.4	V
Reverse Recovery Time	I_F=4A, di/dt=100A/μs	t_{rr}	--	250	--	ns
Reverse Recovery Charge		Q_{rr}	--	4.5	--	μC

Note:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
3. The test condition is L=10mH, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C
4. Essentially independent of operating temperature.

Switching Time Waveform

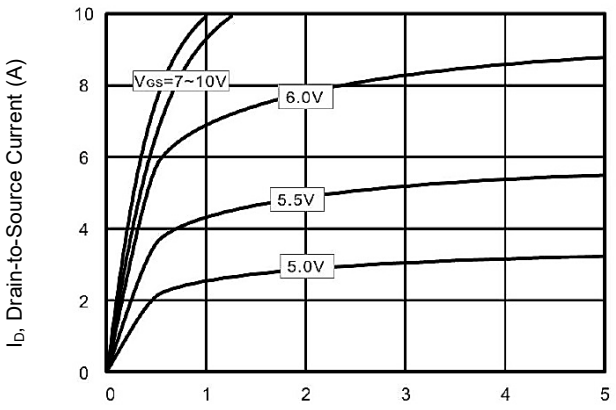


Switching Test Circuit

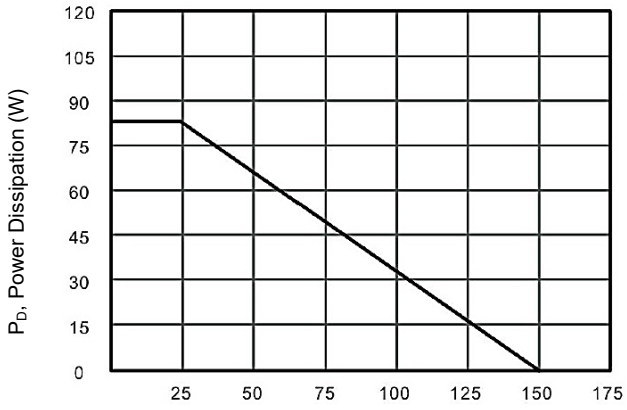


CHARACTERISTIC CURVES

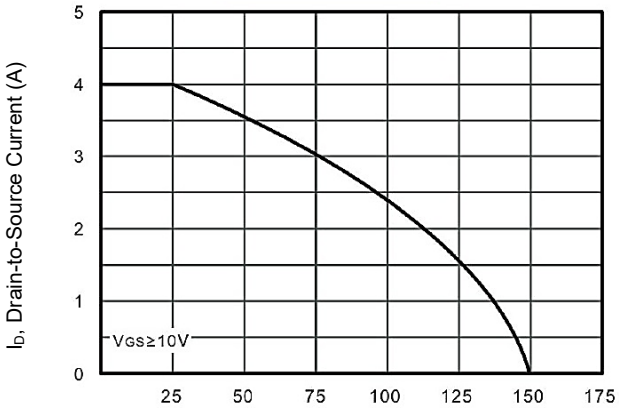
Output Characteristics



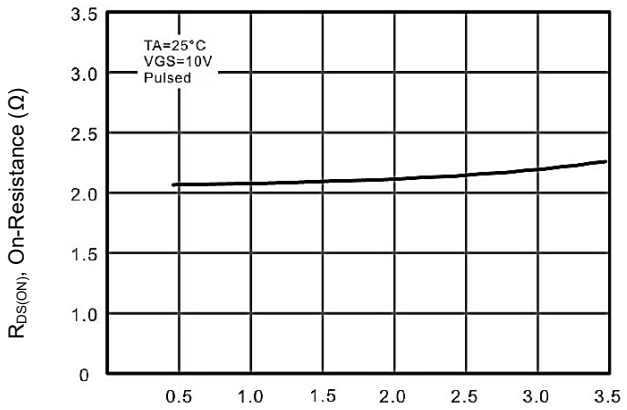
Power Dissipation



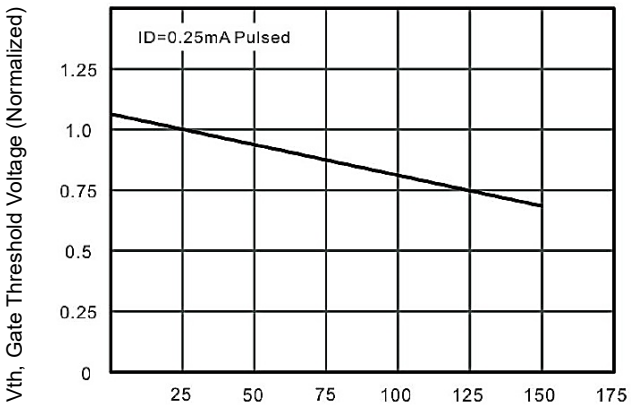
Drain Current Derating



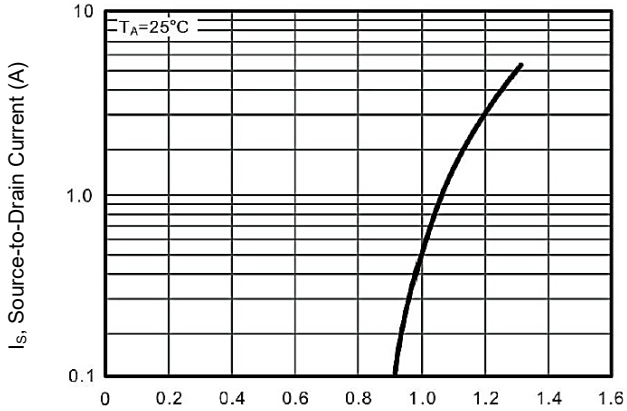
On-Resistance vs. Drain Current



Threshold Voltage vs. Temperature

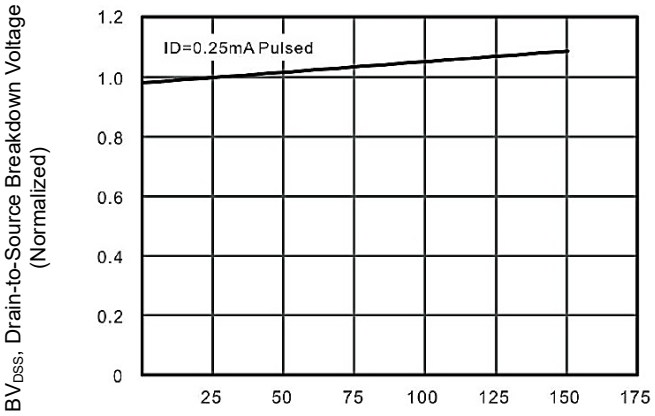


Body Diode Characteristics

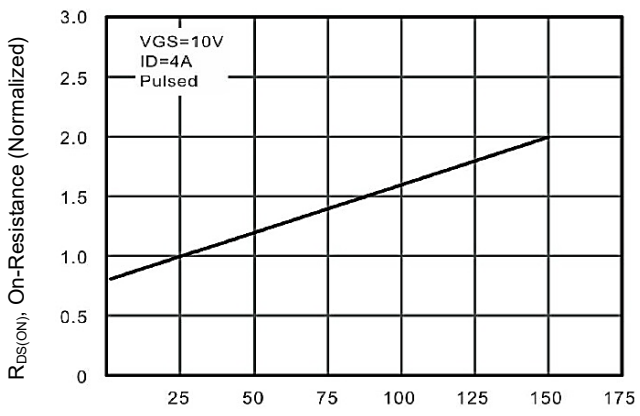


CHARACTERISTIC CURVES

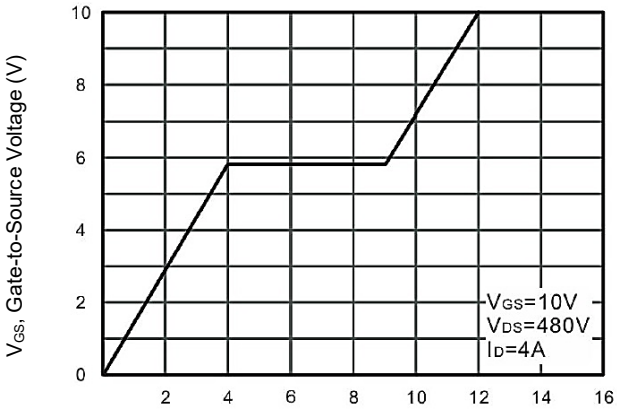
Breakdown Voltage vs. Temperature



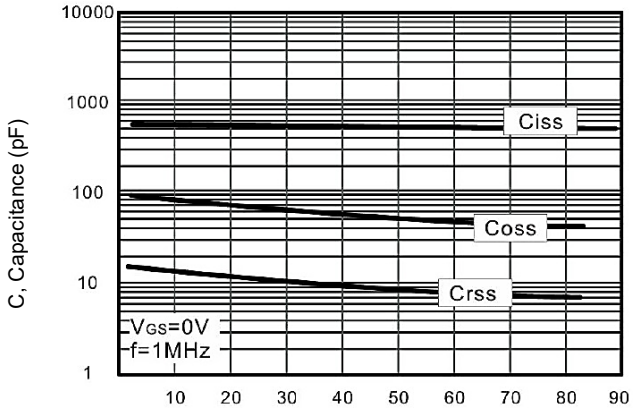
Normalized On-Resistance vs. Temperature



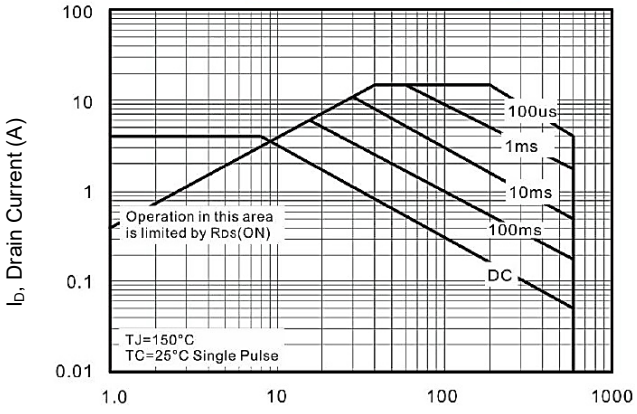
Gate-Charge Characteristics



Capacitance



Maximum Safe Operating Area



CHARACTERISTICS CURVES