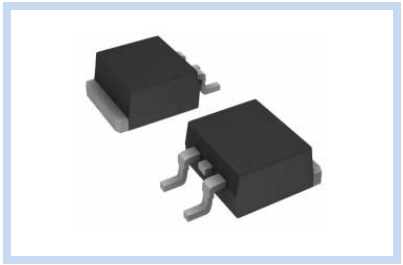
N-Channel MOSFET
60V 20.7A 34.7W TO-252

MFT6N20A7T252

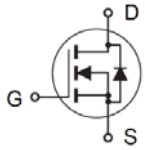
MERITEK

FEATURE



- $R_{DS(ON)}$<45mΩ at V_{GS}=10V, I_D=5.3A
- $R_{DS(ON)}$<52mΩ at V_{GS}=4.5V, I_D=4.7A
- High Power and Current handing Capability
- High Density Cell Design for Extremely Low On-Resistance
- Application: Power Management in Note book, Battery Powered System
- RoHS compliant.

MECHANICAL DATA



RoHS

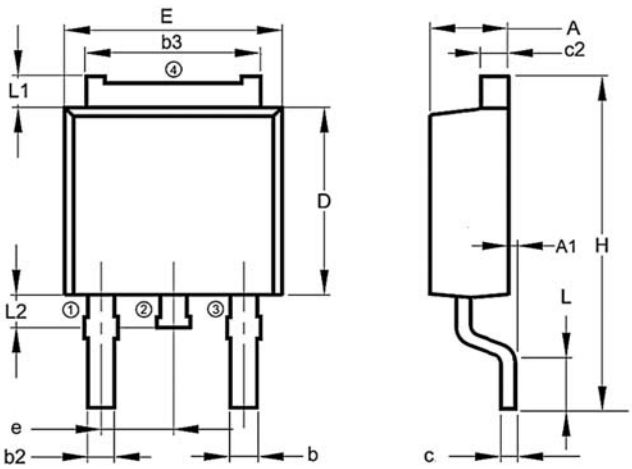
- Case: TO-252 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current – Continuous	T_C=25°C	I_D	20.7	A
	T_C=100°C		13	
Drain Current – Pulsed	T_C=25°C	I_{DM}	82.8	A
Power Dissipation	T_C=°C	P_D	34.7	W
	Derate above 25°C		0.28	W/°C
Single Pulse Avalanche Energy		E_{AS}	28	mJ
Single Pulse Avalanche Current		I_{AS}	7.5	A
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	50	°C/W
Thermal Resistance Junction to Case		$R_{\theta JC}$	3.6	°C/W
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to 150	°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	10.6
L	0.25	--
L1	0.70	1.78
L2	0.50	1.20
Note: 1: Gate, 2, 4: Drain, 3: Source		



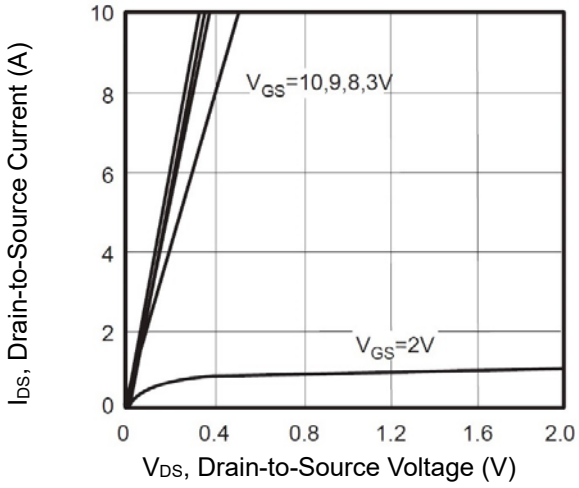
ELECTRICAL CHARACTERISTICS

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}=±20V, V_{DS}=0V	I_{GSSF}	--	--	±100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=5.3A	$R_{DS(ON)}$	--	35	45	mΩ
	V_{GS}=4.5V, I_D=4.7A		--	40	52	
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	$V_{GS(th)}$	1.0	--	2.5	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=30V, V_{GS}=4.5V, I_D=4.5A	Q_g	--	9.7	--	nC
Gate-Source Charge		Q_{gs}	--	1.6	--	
Gate-Drain Charge		Q_{gd}	--	4.2	--	
Turn-On Delay Time	V_{DD}=30V, V_{GS}=10V, R_G=6Ω I_D=1A	$T_{d(on)}$	--	11	--	ns
Rise Time		T_r	--	4	--	
Turn-Off Delay Time		$T_{d(off)}$	--	51	--	
Fall Time		T_f	--	7	--	
Input Capacitance	V_{DS}=25V, V_{GS}=0V, F=1MHz	C_{iss}	--	750	--	pF
Output Capacitance		C_{oss}	--	65	--	
Reverse Transfer Capacitance		C_{rss}	--	50	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Drain-Source Diode Forward Current	--	I_S	--	--	20.7	A
Diode Forward Voltage	V_{GS}=0V, I_S=1A	V_{SD}	--	--	1.3	V

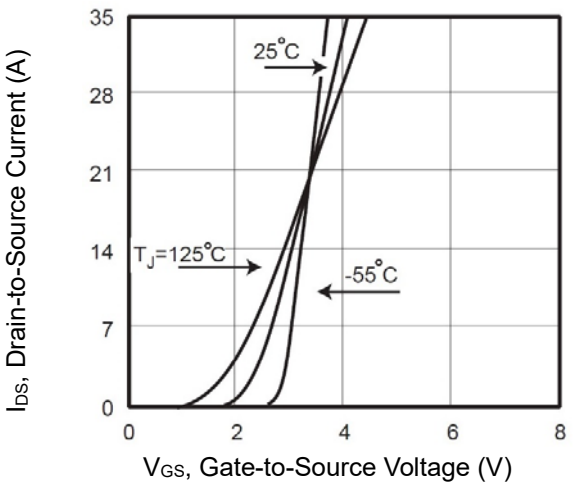
Note:
1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
3. Guaranteed by design, not subject to production testing.
4. The test condition is L=1mH, I_{AS}=7.5A, R_G=25Ω, Starting T_J=25°C.
5. Device mounted on FR-4 board, t<10 sec.

CHARACTERISTIC CURVES

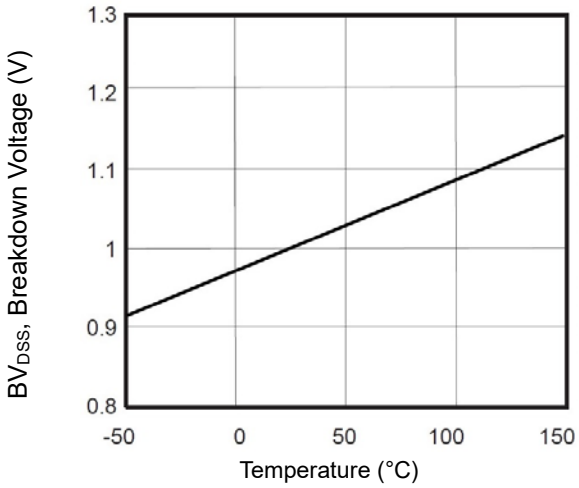
Output Characteristics



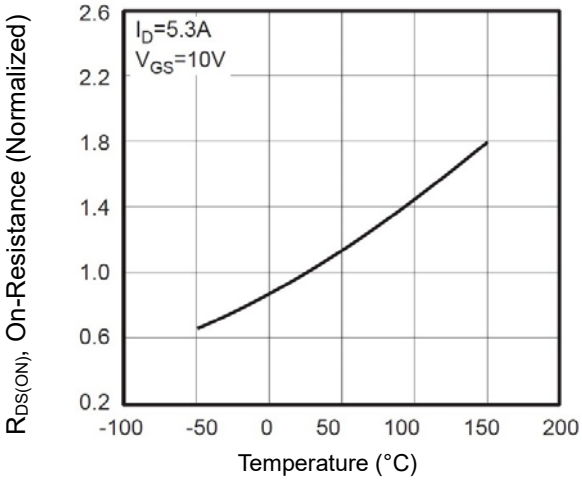
Transfer Characteristics



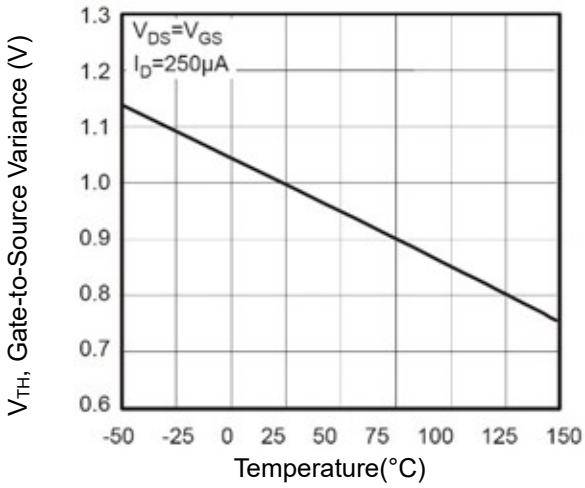
Breakdown Voltage vs. Temperature



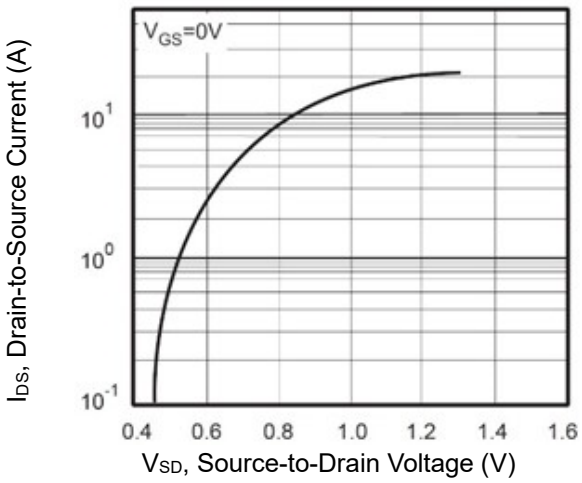
On-Resistance vs. Junction temperature



Threshold Voltage Variation with Temperature

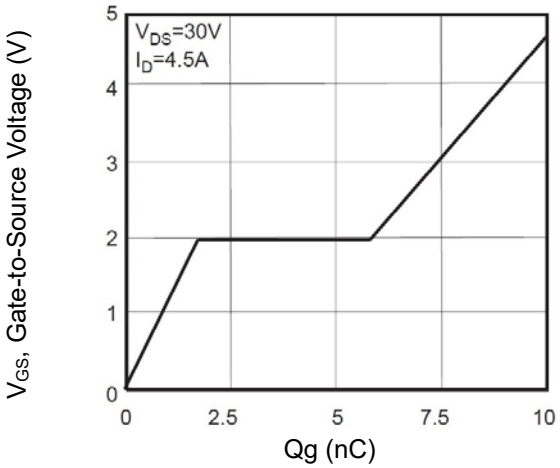


Body Diode Characteristics

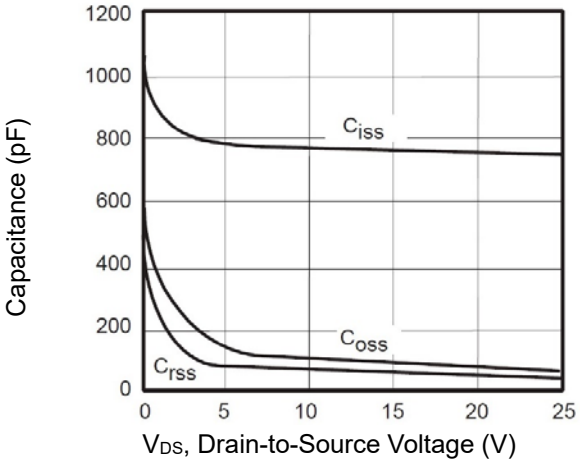


CHARACTERISTIC CURVES

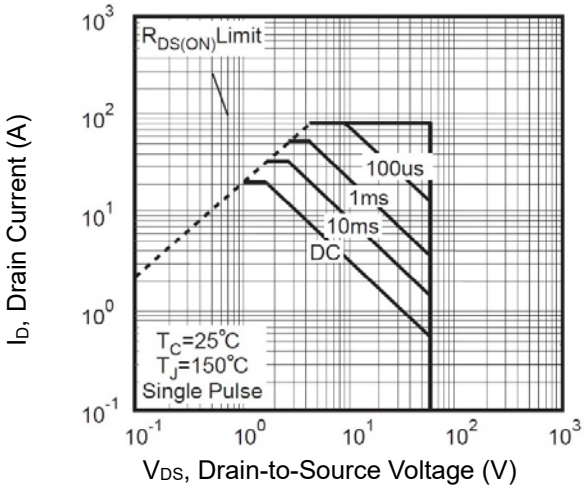
Gate-Charge Characteristics



Capacitance vs. Drain-Source Voltage



Maximum Safe Operating Area



Normalized Transient Thermal Impedance vs Pulse Width