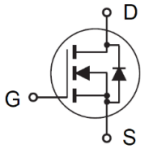
N-Channel MOSFET
650V 8A 69.4W TO-220F

MFT65N8A0T220F

MERITEK

FEATURE

- $R_{DS(ON)} \leqq 400m\Omega$ at $V_{GS}=10V$
- Low On-Resistance and Low Conduction Losses
- Application: Uninterruptible Power Supply, Power Factor Correction, Switched Mode Power Supplies



RoHS

MECHANICAL DATA

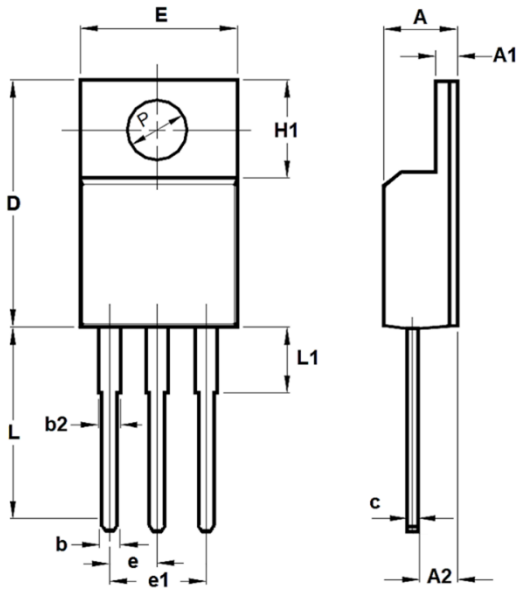
- Case: TO-220F Package
- Terminals: Solderable per MIL-STD-202, Method 208

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	650	V
Gate-Source Voltage		V_{GS}	±30	V
Drain Current – Continuous	T_C=25°C	I_D	8	A
	T_C=100°C		5	
Drain Current – Pulsed		I_{DM}	27	A
Power Dissipation	T_C=25°C	P_D	69.4	W
Avalanche Current		I_{AS}	2.8	A
Single Pulsed Avalanche Energy		E_{AS}	309.6	mJ
Thermal Resistance from Junction to Ambient		$R_{\theta JC}$	50	°C/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.8	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A	4.50	4.90
A1	2.30	2.80
A2	2.50	2.90
b	0.70	0.90
b2	1.10	1.50
c	0.40	0.70
D	15.00	16.00
E	9.50	10.50
e	2.54 Typ	
e1	5.08 Typ	
H1	6.20	6.70
L	12.50	13.50
L1	2.90	3.50
P	2.90	3.40

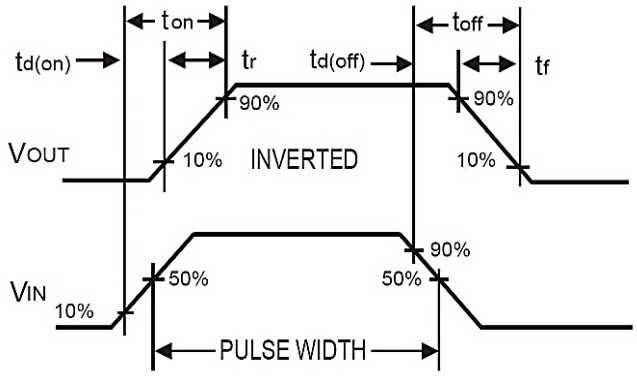


ELECTRICAL CHARACTERISTICS

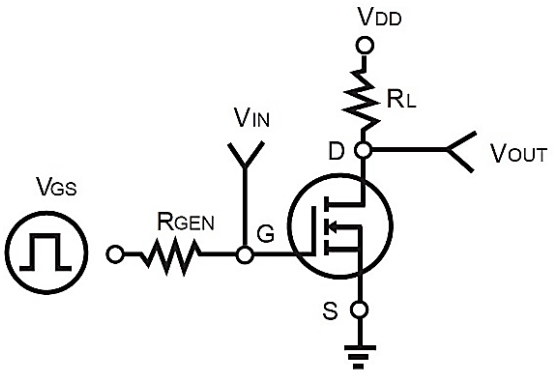
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	BV_{DSS}	650	--	--	V
Drain-Source Leakage Current	V_{DS}=650V, V_{GS}=0V	I_{DSS}	--	--	1	μA
Gate-Body Leakage Current,	V_{GS}=±30V, V_{DS}=0V	I_{GSS}	--	--	±100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=5.5A	$R_{DS(ON)}$	--	381	400	mΩ
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	$V_{GS(th)}$	2	--	4	V
Forward Transconductance	V_{DS}=5V, I_D=5.5A	g_{FS}	--	6	--	S
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=325V, V_{GS}=10V, I_D=5.5A	Q_g	--	20.4	--	nC
Gate-Source Charge		Q_{gs}	--	4	--	
Gate-Drain Charge		Q_{gd}	--	10	--	
Turn-On Delay Time	V_{DD}=325V, V_{GS}=10V, I_D=5.5A, R_g=24Ω,	$T_{d(on)}$	--	30	--	nS
Rise Time		T_r	--	19	--	
Turn-Off Delay Time		$T_{d(off)}$	--	30	--	
Fall Time		T_f	--	37	--	
Input Capacitance	V_{DS}=325V, V_{GS}=0V, F=1MHz	C_{iss}	--	630	--	pF
Output Capacitance		C_{oss}	--	32	--	
Reverse Transfer Capacitance		C_{rss}	--	7	--	
Gate Resistance	V_{DS}=0V, V_{GS}=0V, F=1MHz	R_g	--	3	--	Ω
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Drain-Source Diode Forward Current	--	I_S	--	--	8	A
Diode Pulse Forward Current		I_{SM}	--	--	27	A
Diode Forward Voltage	V_{GS}=0V, I_S=17A	V_{SD}	--	--	1.4	V
Reverse Recovery Time	I_D = 5.5A,di/dt = 100A/μs	T_{rr}	--	316	--	nS
Reverse Recovery Charge		Q_{rr}	--	2.9	--	μC

Note:
1. T_A =25°C unless otherwise noted
2. The data tested by pulsed, pulse width ≦100μs, duty cycle ≦2%, Reptitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C
3. Limited by $T_{J(MAX)}$, starting T_J=25°C, L=79mH, Rg=25Ω, I_{AS}=2.8A, V_{GS}=10V

Switching Time Waveform

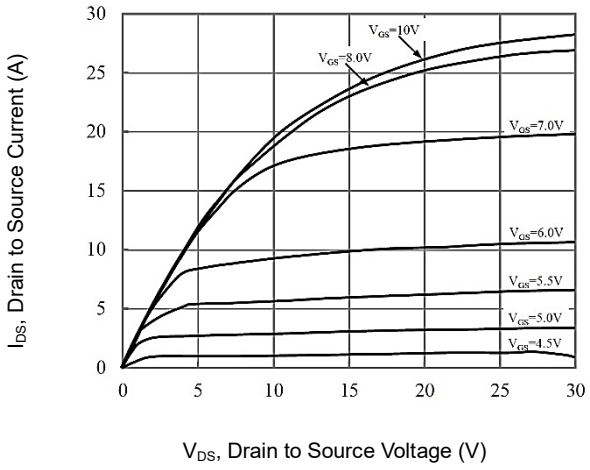


Switching Test Circuit

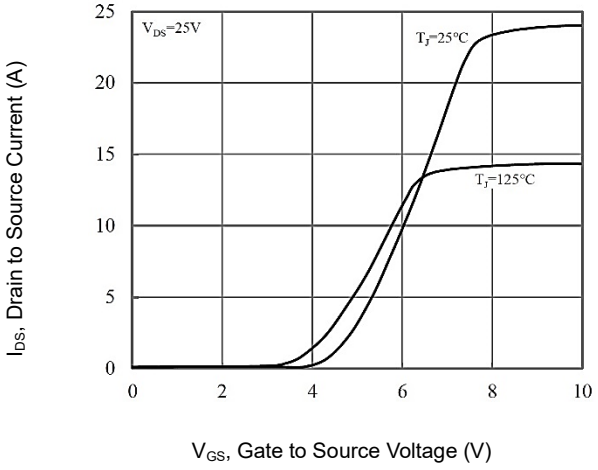


CHARACTERISTIC CURVES

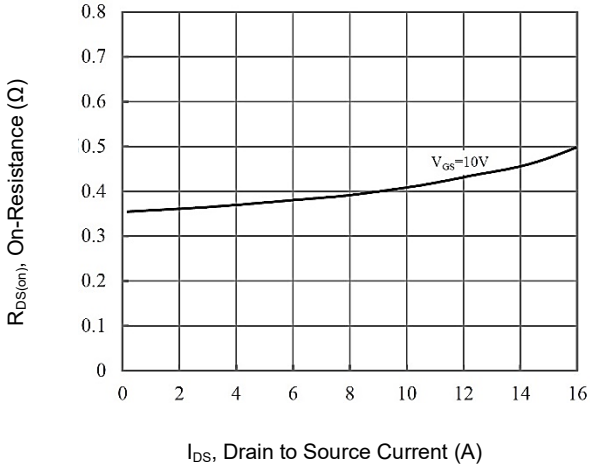
On-Region Characteristic



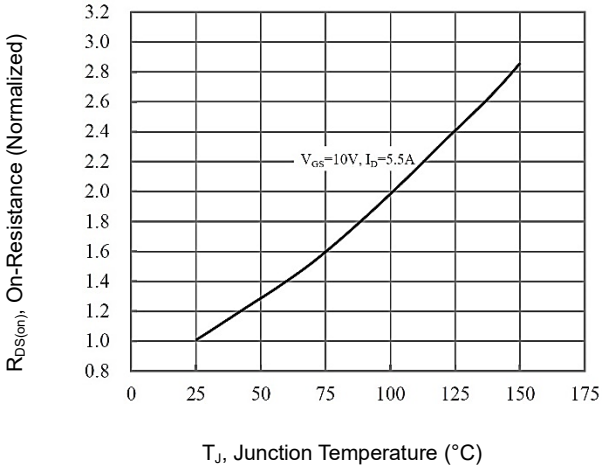
Transfer Characteristics



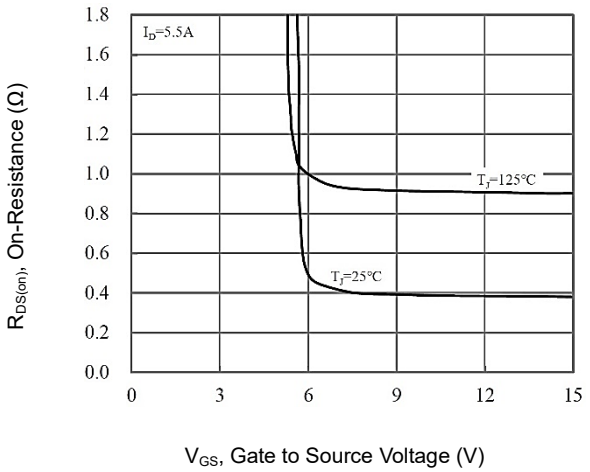
On-Resistance vs. Drain Current



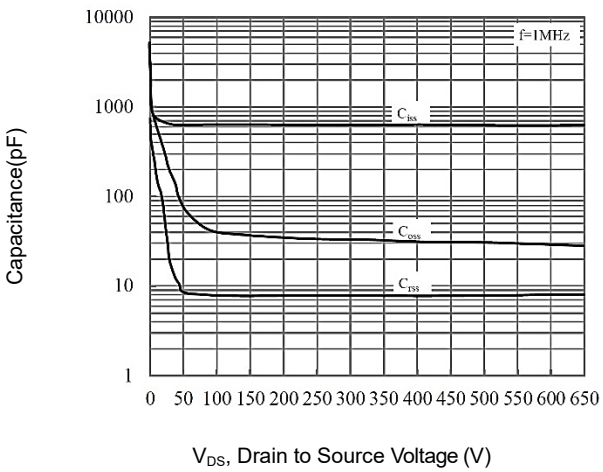
On-Resistance vs. Junction Temperature



On-Resistance vs. Gate to Source Voltage

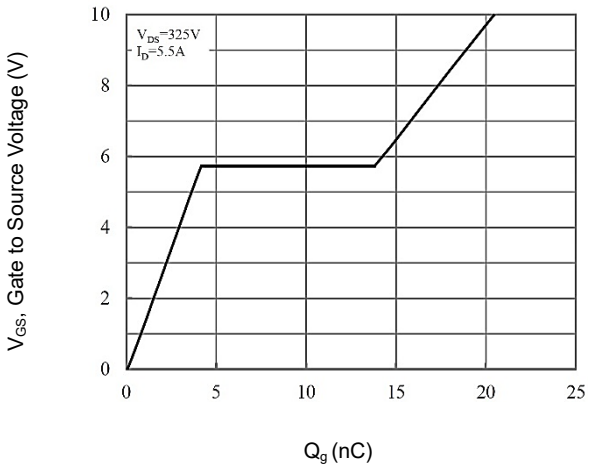


Capacitance vs. Drain-Source Voltage

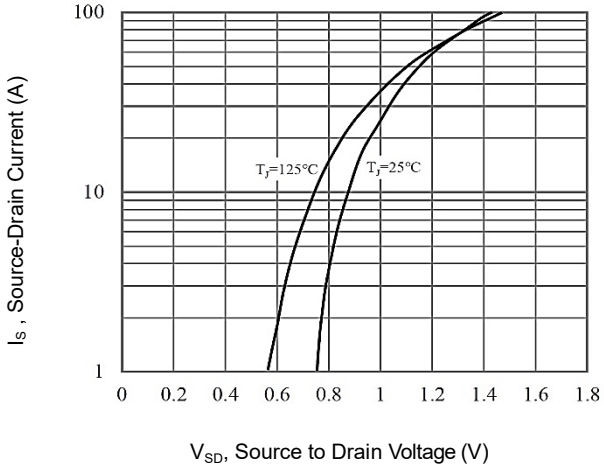


CHARACTERISTIC CURVES

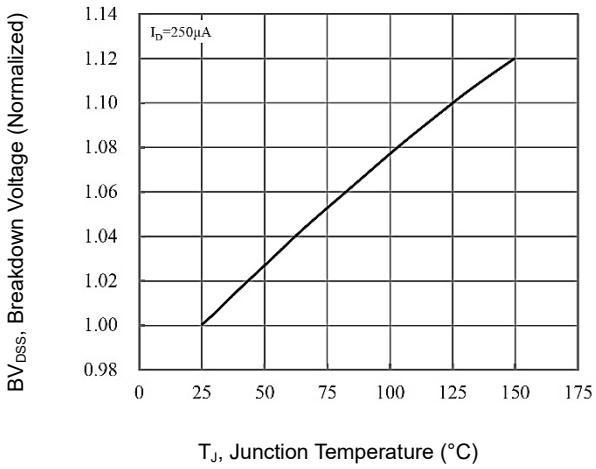
Gate-Charge Characteristics



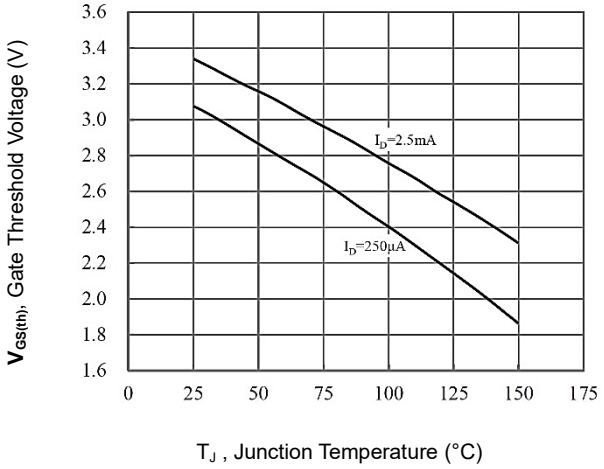
Source-Drain Diode Forward Voltage



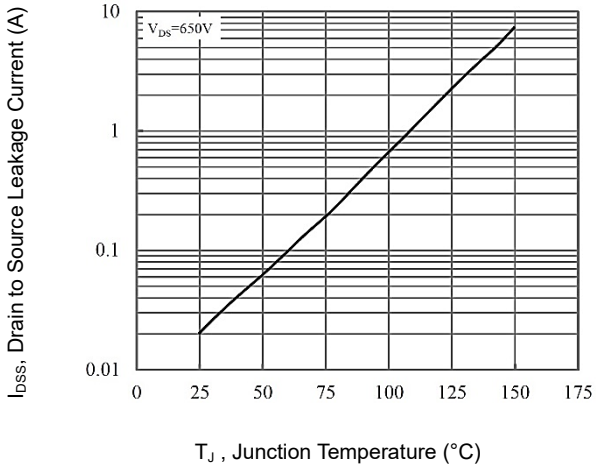
Breakdown Voltage vs Junction Temperature



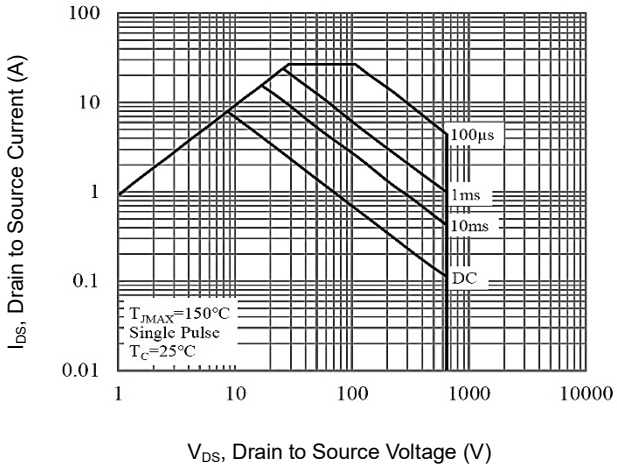
Gate Threshold Voltage vs Temperature



Drain-Source Leakge Current vs Temperature

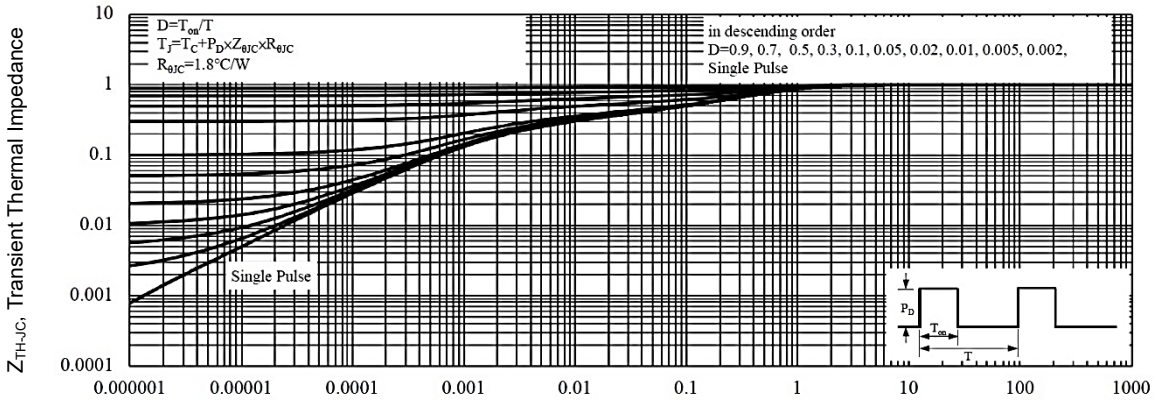


Maximum Safe Operating Area



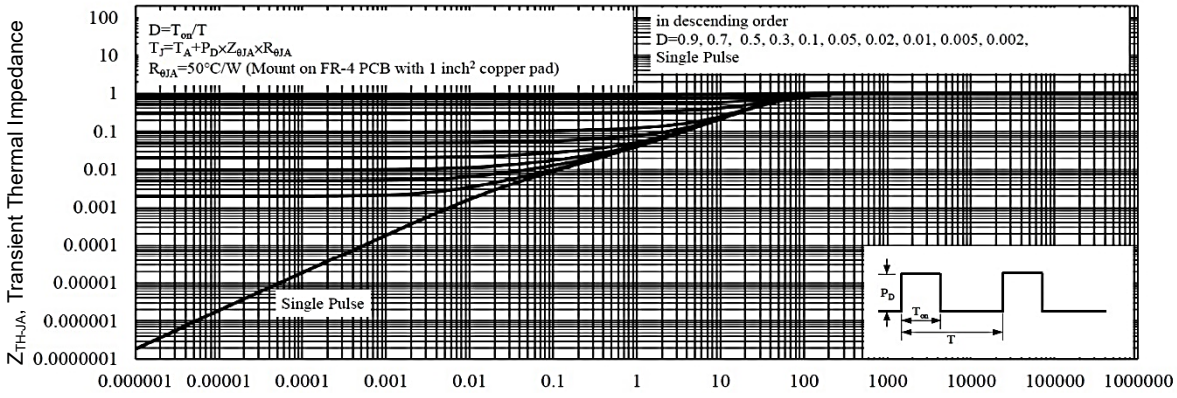
CHARACTERISTIC CURVES

Normalized Transient Thermal Impedance from Junction to Case



t, Pulse Width (mSec)

Normalized Transient Thermal Impedance from Junction to Ambient



t, Pulse Width (mSec)