

N-Channel MOSFET

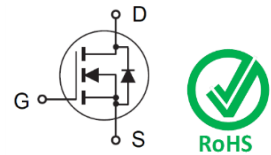
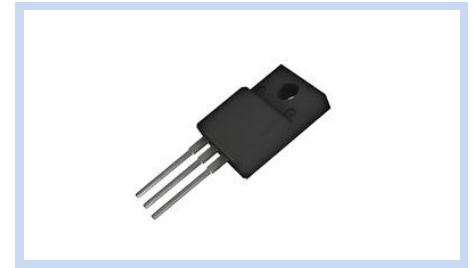
800V 17A 35W TO-220F

MFT80N17T220F

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FEATURE

- $R_{DS(ON)} \leq 320m\Omega$ at $V_{GS}=10V$
- Low ON-Eesistance and Low Conduction Losses
- Ultra Low Gate Charge Cause Lower Driving Requirements
- Application: Uninterruptible Power Supply, Power Factor Correction, Switched Mode Power Supplies



MECHANICAL DATA

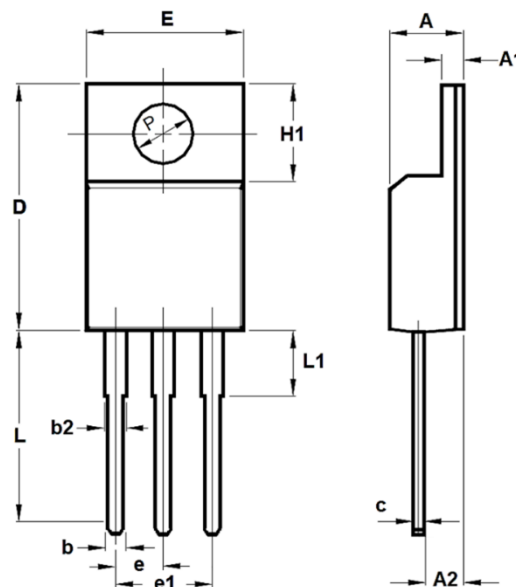
- Case: TO-220F Package
- Terminals: Solderable per MIL-STD-202, Method 208

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage	$V_{GS}=0V$	V_{DS}	800	V
Gate-Source Voltage	$V_{DS}=0V$, AC ($f>1$ Hz)	V_{GS}	± 30	V
Drain Current – Continuous	$T_C=25^{\circ}C$	I_D	17	A
	$T_C=100^{\circ}C$		11	
Drain Current – Pulsed		I_{DM}	68	A
Power Dissipation		P_D	35	W
Single Pulsed Avalanche Energy		E_{AS}	324	mJ
Thermal Resistance Junction to Case		$R_{\theta JC}$	3.57	$^{\circ}C/W$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}C$

DIMENSIONS

Item	Min (mm)	Max (mm)
A	4.50	4.90
A1	2.34	2.74
A2	2.15	2.96
b	0.70	0.90
b2	1.18	1.58
c	0.40	0.60
D	15.67	16.07
E	9.86	10.46
e	2.54 BSC	
e1	5.08 BSC	
H1	6.48	5.90
L	12.64	13.24
L1	3.03	3.43
P	3.08	3.50



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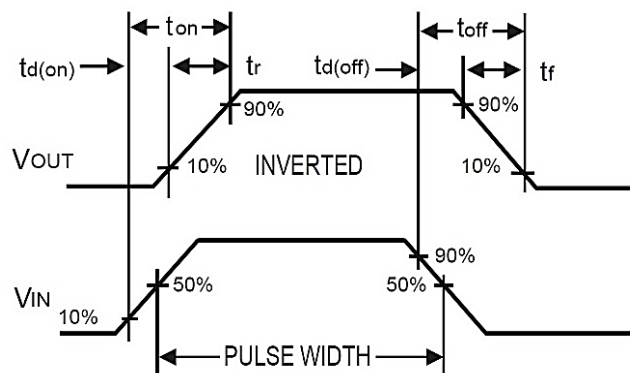
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	800	--	--	V
Drain-Source Leakage Current	$V_{DS}=800V, V_{GS}=0V, T_C=25^\circ C$	I_{DSS}	--	--	1	μA
Gate-Body Leakage Current,	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	--	--	± 100	nA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=8.5A$	$R_{DS(ON)}$	--	260	320	m Ω
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	3	3.5	4	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=480V, V_{GS}=10V, I_D=17A$	Q_g	--	36	--	nC
Gate-Source Charge		Q_{gs}	--	12.5	--	
Gate-Drain Charge		Q_{gd}	--	11	--	
Turn-On Delay Time	$V_{DS}=480V, V_{GS}=10V, R_G=2.3\Omega, I_D=8.5A$	$T_{d(on)}$	--	14	--	nS
Rise Time		T_r	--	12	--	
Turn-Off Delay Time		$T_{d(off)}$	--	65	--	
Fall Time		T_f	--	11	--	
Input Capacitance	$V_{DS}=50V, V_{GS}=0V, F=1MHz$	C_{iss}	--	2060	--	pF
Output Capacitance		C_{oss}	--	120	--	
Reverse Transfer Capacitance		C_{rss}	--	0.5	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	$T_C=25^\circ C$	I_S	--	--	17	A
Diode Forward Voltage	$V_{GS}=0V, I_S=17A, T_J=25^\circ C$	V_{SD}	--	--	1.2	V
Reverse Recovery Time	$I_D = 8.5A, di/dt = 100A/\mu s, T_J=25^\circ C$	T_{rr}	--	300	--	nS
Reverse Recovery Charge		Q_{rr}	--	3.1	--	μC
Reverse Recovery Current		I_{rr}	--	19	--	A

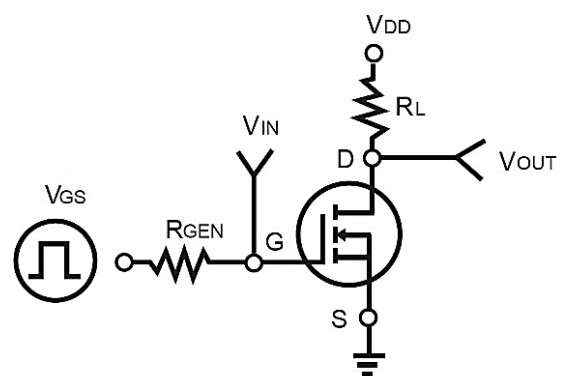
Note:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2oz copper
2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. The EAS data shows Max. rating: $V_G = 10V, V_{DD} = 50V, R_G=25\Omega$, Starting $T_J=25^\circ C$

Switching Time Waveform



Switching Test Circuit



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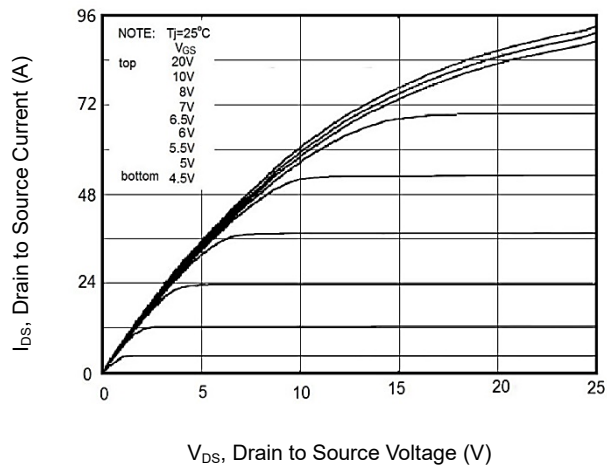
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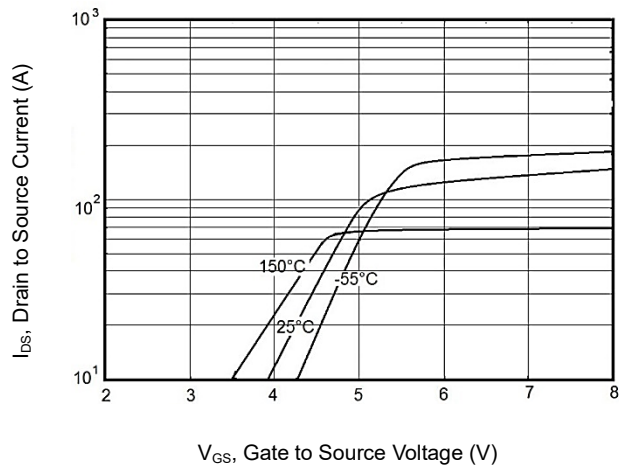
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CHARACTERISTIC CURVES

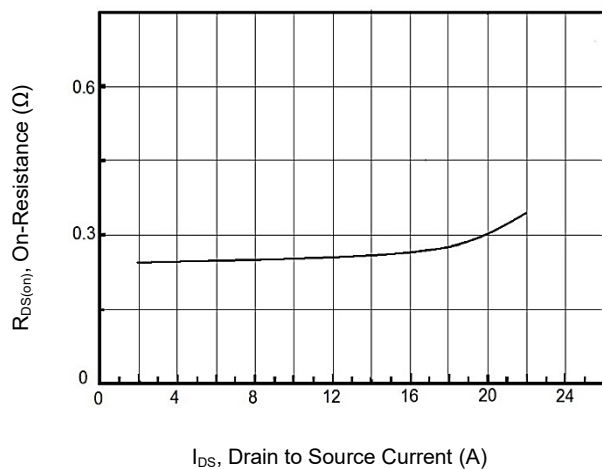
On-Region Characteristic



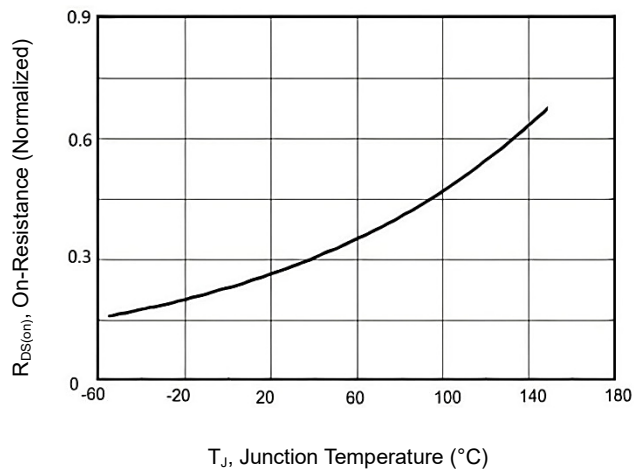
Transfer Characteristics



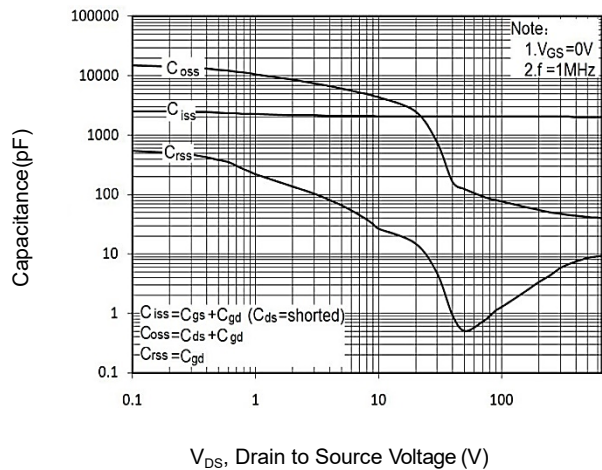
On-Resistance vs. Drain Current



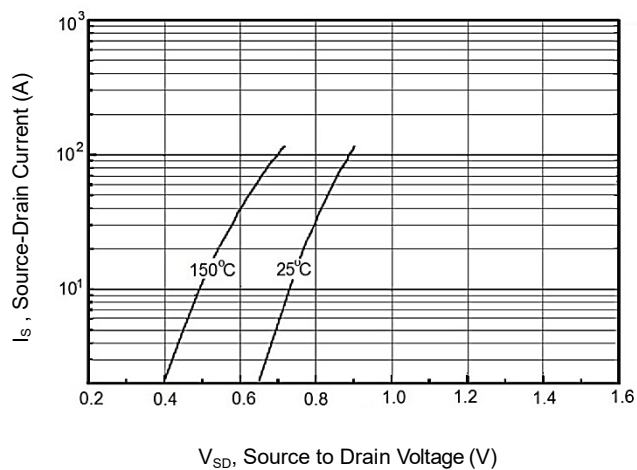
On-Resistance vs. Junction Temperature



Capacitance vs. Drain-Source Voltage



Source-Drain Diode Forward Voltage



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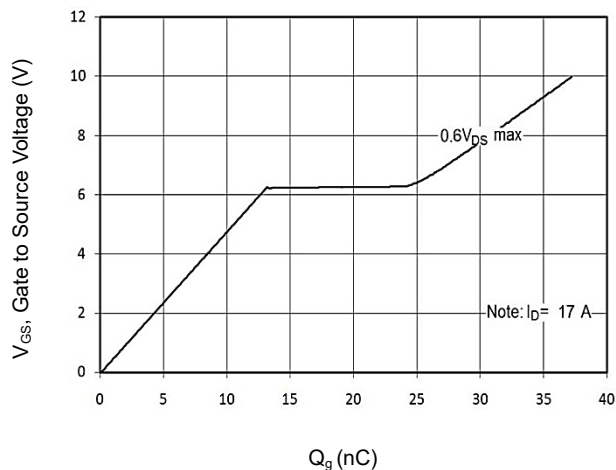
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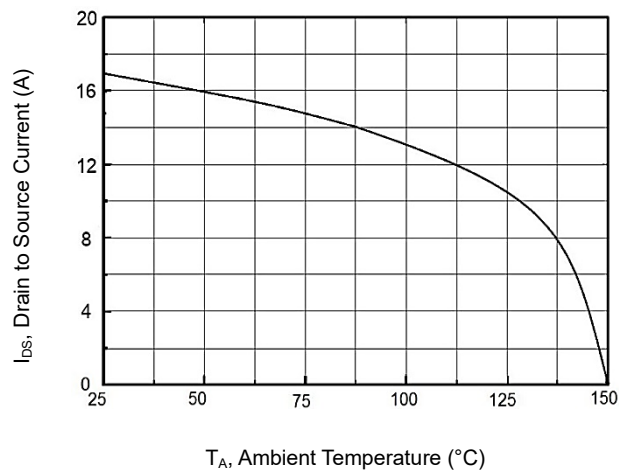
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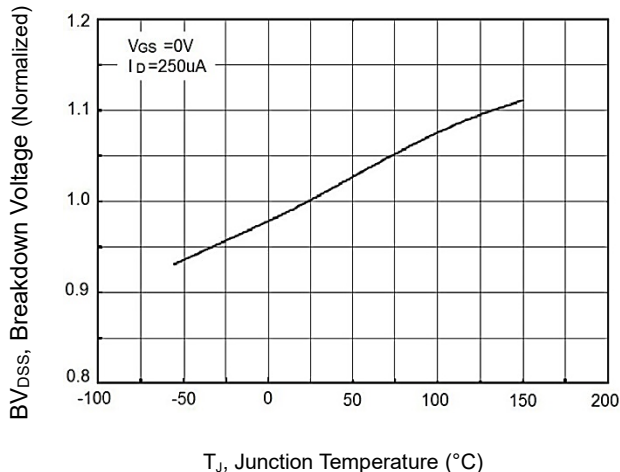
Gate-Charge Characteristics



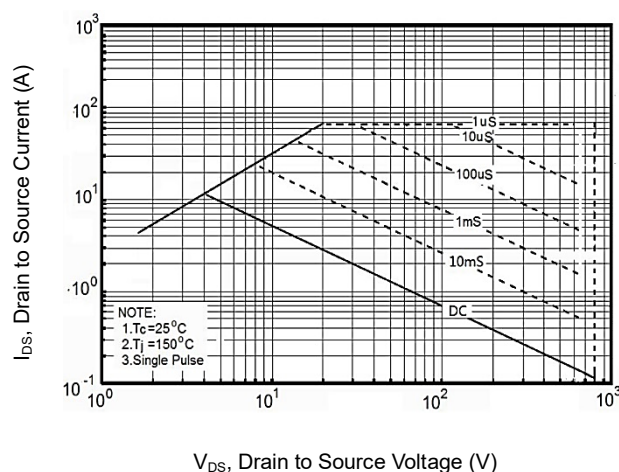
Drain Current



Breakdown Voltage vs Junction Temperature



Maximum Safe Operating Area



Normalized Transient Thermal Impedance

