

N-Channel MOSFET

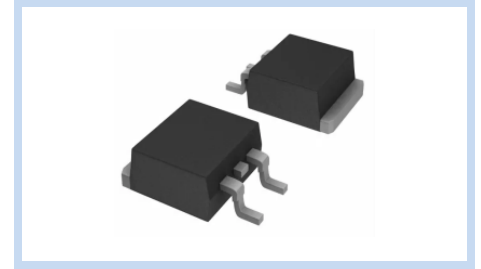
1000V 3A 111W TO-252

MFT100N3A0T252

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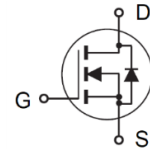
FEATURE

- $R_{DS(ON)} < 6\Omega$, $V_{GS}=10V$, $I_D=1A$
- High Power and Current Handling 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



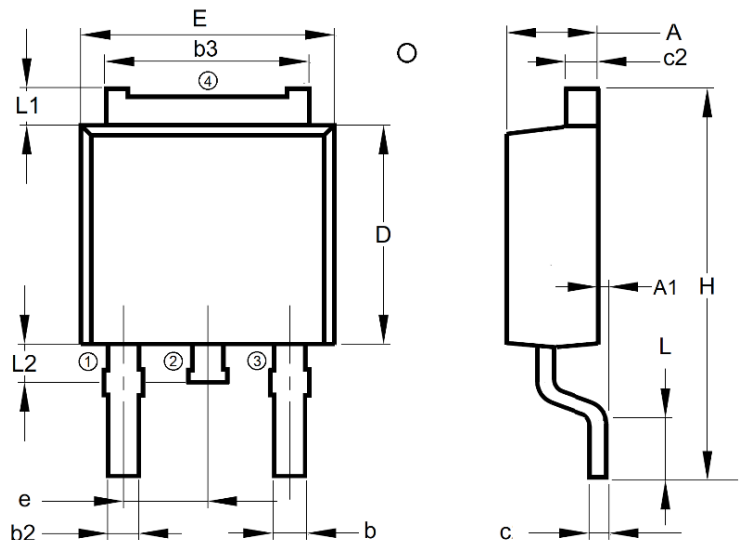
MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	1000	V
Gate-Source Voltage		V_{GS}	± 30	V
Drain Current – Continuous	$T_C=25^\circ\text{C}$	I_D	3	A
	$T_C=100^\circ\text{C}$		1.9	
Drain Current – Pulsed	$T_C=25^\circ\text{C}$	I_{DM}	12	A
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	111	W
	Derate above 25°C		0.74	
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance Junction to Case		$R_{\theta JC}$	1.35	$^\circ\text{C/W}$
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to 175	$^\circ\text{C}$

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



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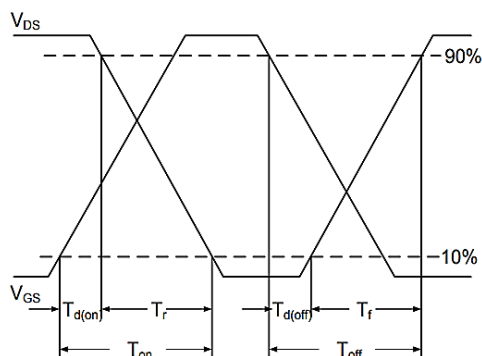
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	1000	-	-	V
Drain-Source Leakage Current	$V_{DS}=1000V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate-Body Leakage Current, Forward	$V_{GS}=30V, V_{DS}=0V$	I_{GSSF}	-	-	100	nA
Gate-Body Leakage Current, Reverse	$V_{GS}=-30V, V_{DS}=0V$	I_{GSSR}	-	-	-100	nA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=1.5A$	$R_{DS(ON)}$	-	4.8	6	Ω
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	3	-	4	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=800V, V_{GS}=10V, I_D=1A$	Q_g	-	25	-	nC
Gate-Source Charge		Q_{gs}	-	2	-	
Gate-Drain Charge		Q_{gd}	-	14	-	
Turn-On Delay Time	$V_{DD}=500V, V_{GS}=10V, R_G=10\Omega, I_D=3A$	$T_{d(on)}$	-	23	-	ns
Rise Time		T_r	-	18	-	
Turn-Off Delay Time		$T_{d(off)}$	-	50	-	
Fall Time		T_f	-	18	-	
Input Capacitance	$V_{DS}=25V, V_{GS}=0V, F=1MHz$	C_{iss}	-	485	-	pF
Output Capacitance		C_{oss}	-	75	-	
Reverse Transfer Capacitance		C_{rss}	-	25	-	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	-	I_S	-	-	3	A
Diode Forward Voltage	$V_{GS}=0V, I_S=3A, T_J=25^\circ C$	V_{SD}	-	-	1.4	V

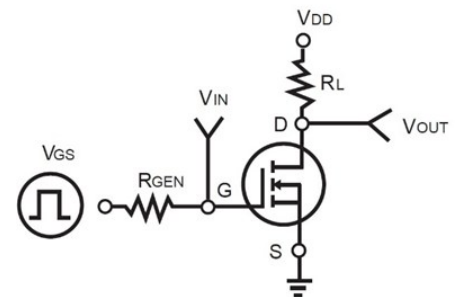
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
3. Guaranteed by design, not subject to production testing.
4. Limited only by maximum temperature allowed.
5. Pulse Width Limited by safe operating area.

Switching Time Waveform

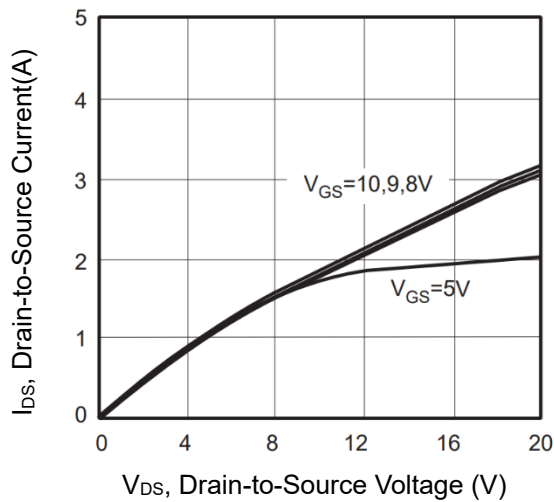


Switching Test Circuit

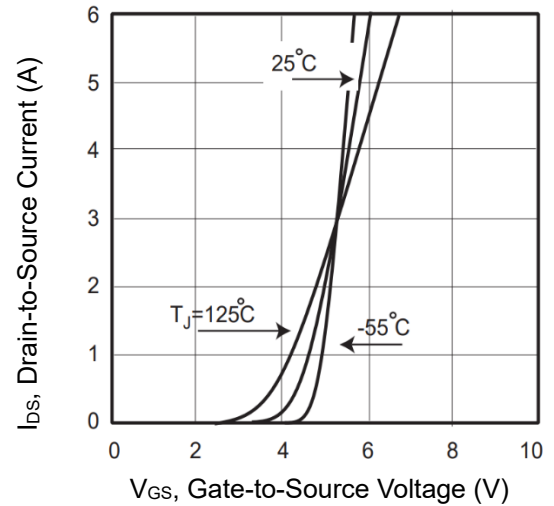


CHARACTERISTIC CURVES

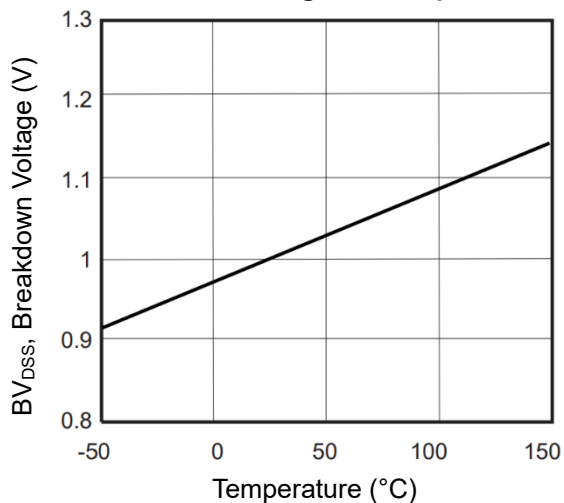
Output Characteristics



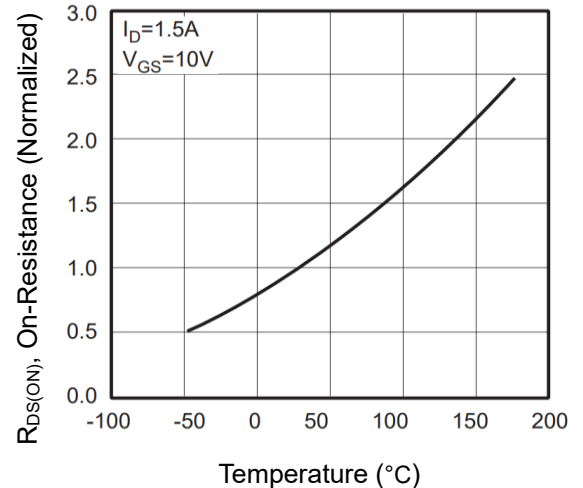
Transfer Characteristics



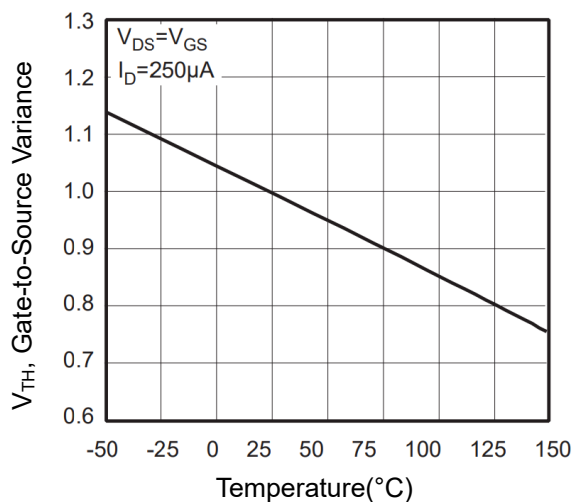
Breakdown Voltage vs. Temperature



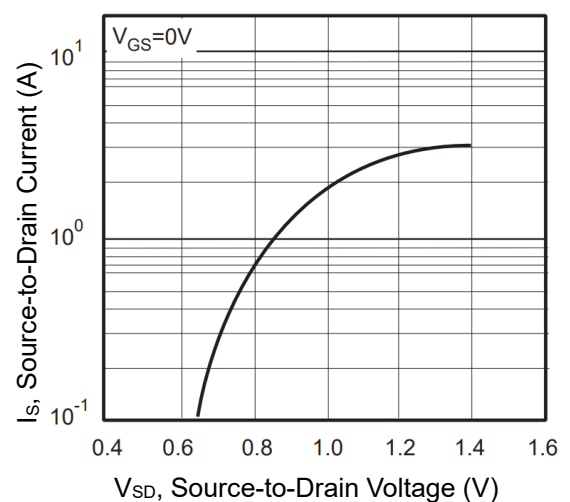
On-Resistance vs. Junction temperature



Threshold Voltage Variation with Temperature



Body Diode Characteristics



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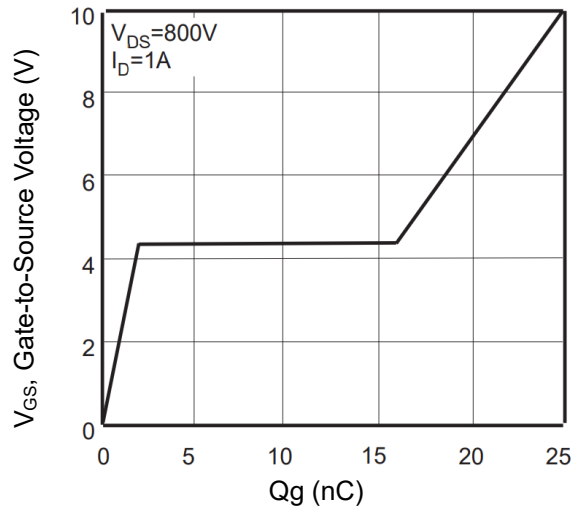
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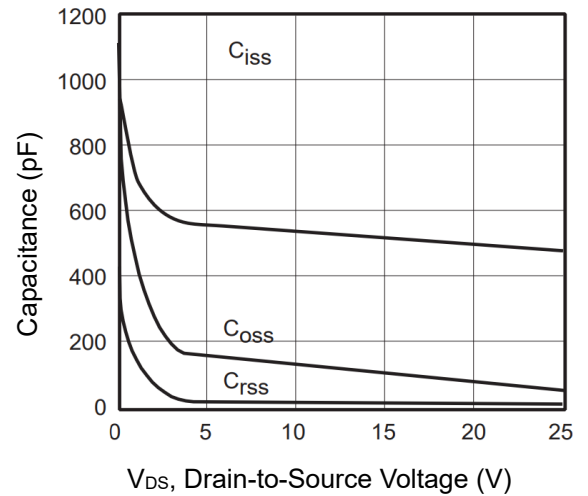
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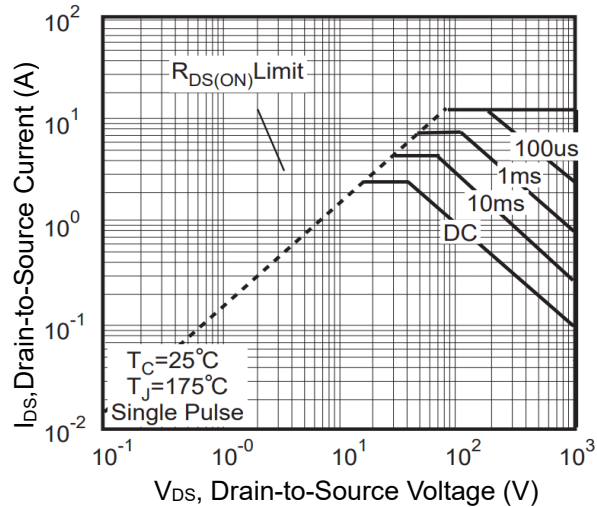
Gate-Charge Characteristics



Capacitance vs. Drain-Source Voltage



Maximum Safe Operating Area



Normalized Transient Thermal Impedance vs Pulse Width

