

N-Channel MOSFET

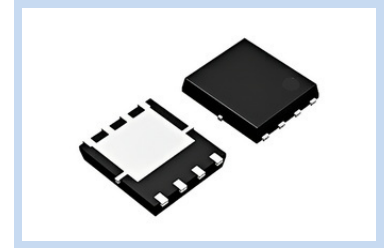
100V 88A 66W DFN5x6-8

MFT10N88D56

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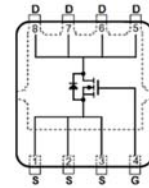
FEATURE

- $R_{DS(ON)} < 4.2m\Omega$, $V_{GS}=10V$, $I_D=20A$
- High Power and Current Handling Capability
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$



MECHANICAL DATA

- Case: Molded Plastic, DFN5x6-8 Package
- Terminal: Solderable per MIL-STD-750, Method 2026

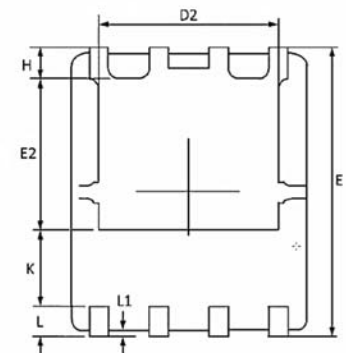
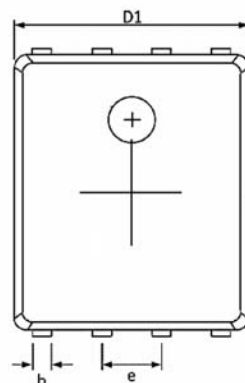


MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current – Continuous	at $R_{\theta JA}$	I_D	27	A
	at $R_{\theta JC}$		88	A
Drain Current – Pulsed	at $R_{\theta JA}$	I_{DM}	108	A
	at $R_{\theta JC}$		352	A
Single Pulsed Avalanche Current		I_{AS}	60	A
Single Pulsed Avalanche Energy		E_{AS}	180	mJ
Maximum Power Dissipation		P_D	66	W
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$	20	$^{\circ}C/W$
Thermal Resistance, Junction to Case		$R_{\theta JC}$	1.9	$^{\circ}C/W$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}C$

DIMENSIONS

Item	Min (mm)	Max (mm)
A	0.80	1.10
b	0.33	0.51
C	0.20	0.30
D1	4.80	5.10
D2	3.61	4.10
E	5.90	6.20
E1	5.70	5.90
E2	3.35	3.78
e	1.27BSC	
H	0.41	0.70
K	1.10	1.50
L	0.51	0.71
L1	0.06	0.20



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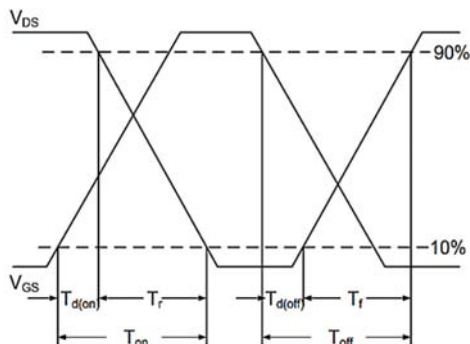
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	BV_{DSS}	100	--	--	V
Drain-Source Leakage Current	$V_{DS} = 100V, V_{GS} = 0V$	I_{DSS}	--	--	1	μA
Gate Leakage Current, Forward	$V_{GS} = 20V, V_{DS} = 0V$	I_{GSSF}	--	--	100	nA
Gate Leakage Current, Reverse	$V_{GS} = -20V, V_{DS} = 0V$	I_{GSSR}	--	--	-100	nA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS} = 10V, I_D = 20A$	$R_{DS(ON)}$	--	3.6	4.2	m Ω
Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 250\mu A$	$V_{GS(th)}$	2	--	4	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS} = 80V, V_{GS} = 10V, I_D = 20A$	Q_g	-	71	-	nC
Gate-Source Charge		Q_{gs}	-	14	-	nC
Gate-Drain Charge		Q_{gd}	-	36	-	nC
Turn-On Delay Time	$V_{DS} = 80V, V_{GS} = 10V, R_G = 6\Omega, I_D = 20A$	$T_{d(on)}$	-	46	-	ns
Rise Time		T_r	-	34	-	ns
Turn-Off Delay Time		$T_{d(off)}$	-	58	-	ns
Fall Time		T_f	-	32	-	ns
Input Capacitance	$V_{DS} = 50V, V_{GS} = 0V, f = 1MHz$	C_{iss}	-	2615	-	pF
Output Capacitance		C_{oss}	-	750	-	pF
Reverse Transfer Capacitance		C_{rss}	-	43	-	pF
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Current-Continuous	--	I_S	--	--	55	A
Diode Forward Voltage	$V_{GS} = 0V, I_S = 10A$	V_{SD}	--	--	1.2	V

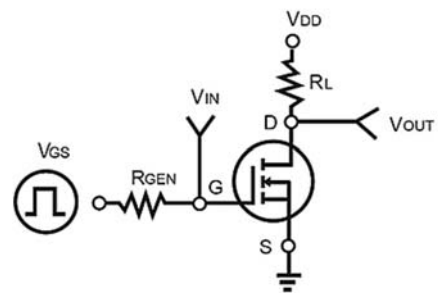
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
4. Guaranteed by design, not subject to production testing
5. $L = 0.1mH, I_{AS} = 60A, V_{DD} = 50V, R_G = 25\Omega$, Starting $T_j = 25^\circ C$

Switching Time Waveform



Switching Test Circuit



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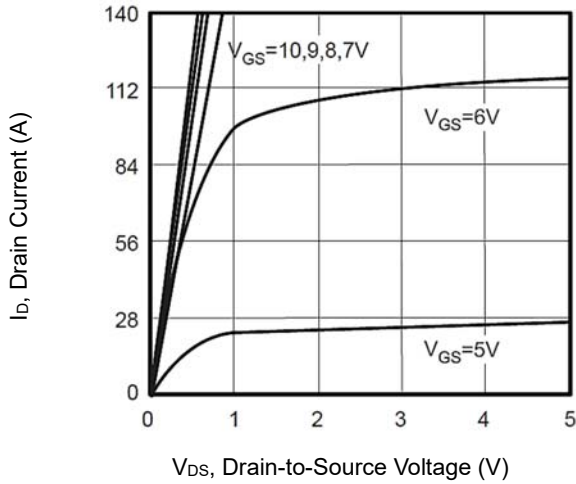
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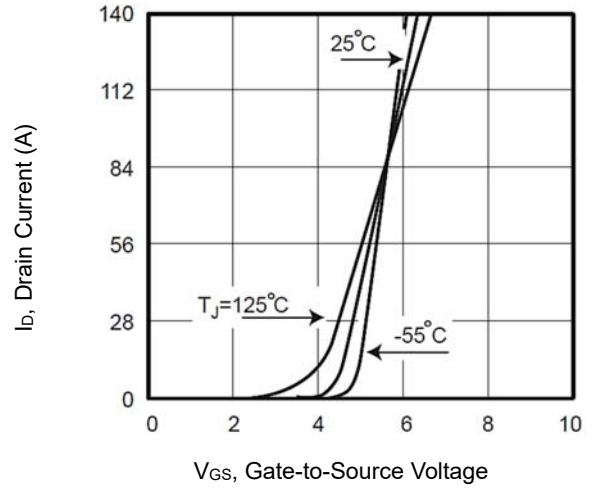
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CHARACTERISTICS CURVES

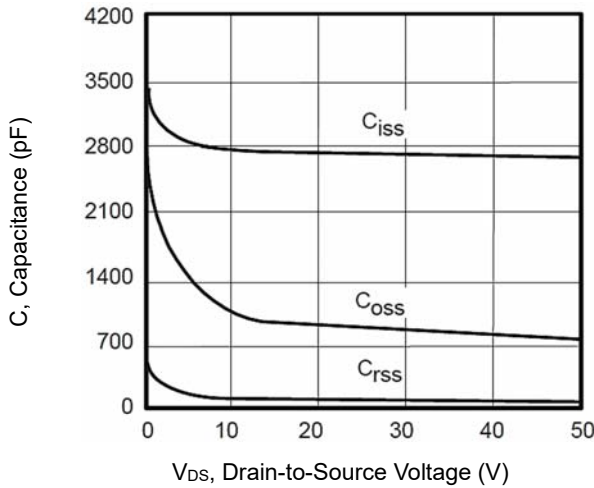
Output Characteristics



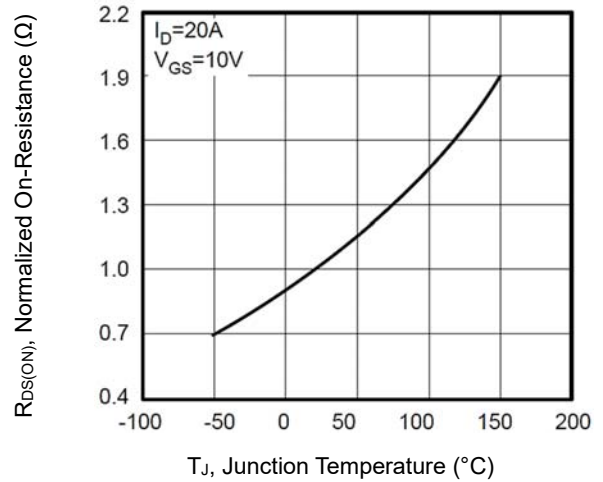
Transfer Characteristics



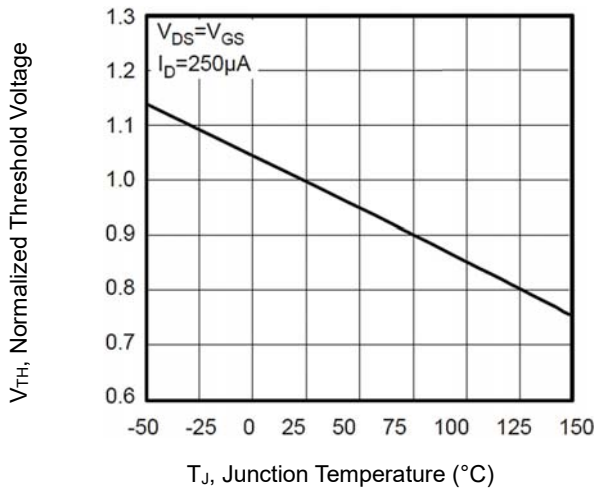
Capacitance



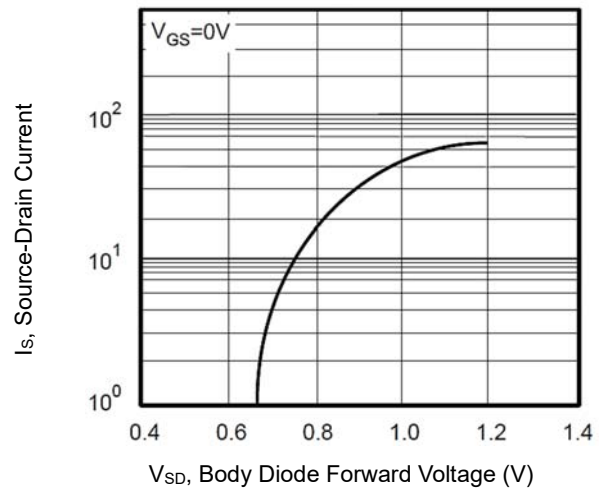
On-Resistance Variation with Temperature



Gate Threshold Voltage with Temperature



Body Diode Characteristics



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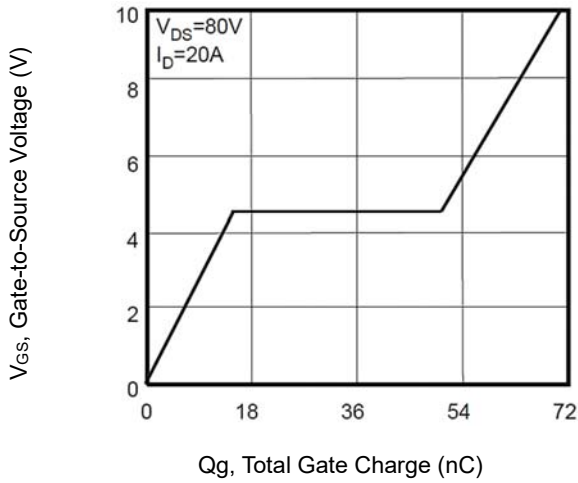
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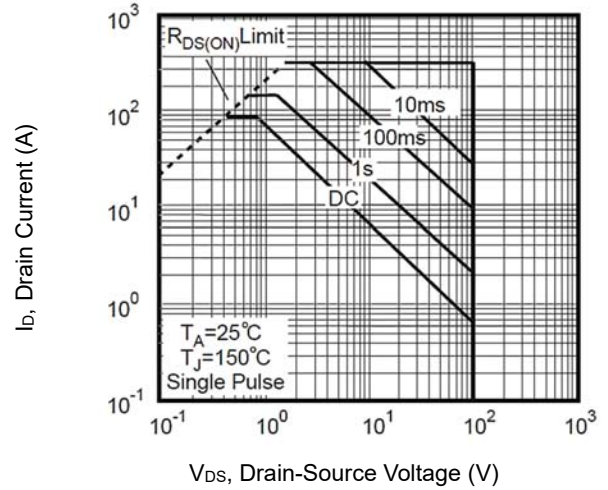
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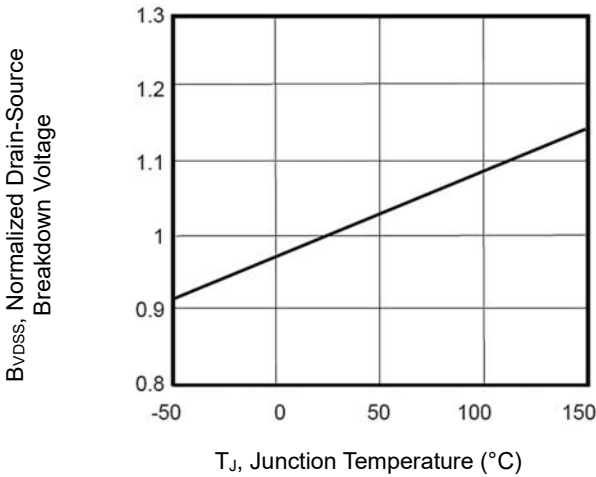
Gate Charge



Maximum Safe Operating Area



Breakdown Voltage Variation with Temperature



Transient Thermal Response Curves

