

N-Channel MOSFET

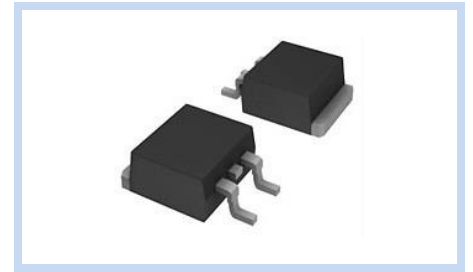
100V 85A 104W TO-263

MFT10N85T263

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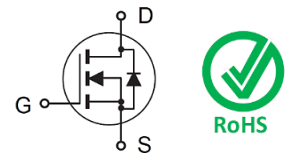
FEATURE

- $R_{DS(ON)}=8m\Omega$ at $V_{GS}=10V$
- High Power and Current Handling Capability
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$
- Applications: High Frequency Circuits, High Speed Switching, E-Fuse, UPS, SMPS



MECHANICAL DATA

- Case: TO-263 Package
- Terminals: Solderable per MIL-STD-750, Method 2026



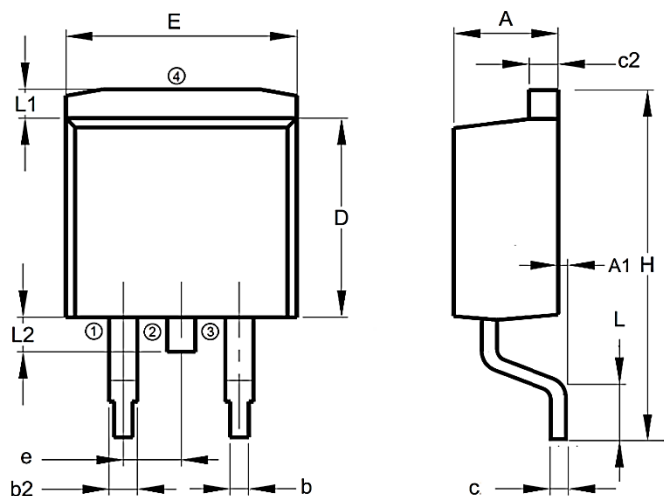
MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current – Continuous	$T_C=25^{\circ}C$	I_D	85	A
	$T_C=100^{\circ}C$		54	
Drain Current – Pulsed		I_{DM}	340	A
Power Dissipation	$T_C=25^{\circ}C$	P_D	104	W
	Derate above $25^{\circ}C$		0.8	
Single Pulsed Avalanche Energy		E_{AS}	220.5	mJ
Single Pulsed Avalanche Current		I_{AS}	21	A
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	62.5	$^{\circ}C/W$
Thermal Resistance Junction to Case		$R_{\theta JC}$	1.2	$^{\circ}C/W$
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to 150	$^{\circ}C$

DIMENSIONS

Item	Min (mm)	Max (mm)
A	4.29	4.70
A1	0.00	0.25
b	0.69	0.94
b2	1.22	1.40
c	0.36	0.56
c2	1.22	1.40
D	8.64	9.65
E	9.70	10.54
e	2.29	2.79
H	14.61	15.88
L	2.24	2.84
L1	0.00	1.40
L2	0.96	1.78

Note: 1: Gate, 2,4: Drain, 3: Source



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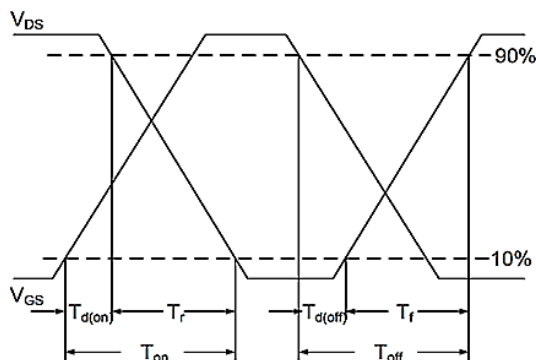
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	100	--	--	V
Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	I_{DSS}	--	--	1	μA
Gate-Body Leakage Current, Forward	$V_{GS}=20V, V_{DS}=0V$	I_{GSSF}	--	--	100	nA
Gate-Body 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	$V_{GS}=10V, I_D=30A$	$R_{DS(ON)}$	--	6.8	8	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	--	38	--	nC
Gate-Source Charge		Q_{gs}	--	7	--	
Gate-Drain Charge		Q_{gd}	--	16	--	
Turn-On Delay Time	$V_{DD}=80V, V_{GS}=10V, R_G=6\Omega, I_D=20A$	$T_{d(on)}$	--	21	--	ns
Rise Time		T_r	--	9	--	
Turn-Off Delay Time		$T_{d(off)}$	--	40	--	
Fall Time		T_f	--	14	--	
Input Capacitance	$V_{DS}=50V, V_{GS}=0V, F=1MHz$	C_{iss}	--	1720	--	pF
Output Capacitance		C_{oss}	--	390	--	
Reverse Transfer Capacitance		C_{rss}	--	20	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	---	I_S	--	--	85	A
Diode Forward Voltage	$V_{GS}=0V, I_S=10A$	V_{SD}	--	--	1.2	V

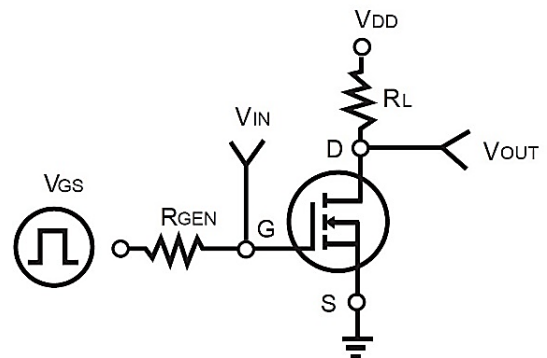
Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
3. $L=1mH, I_{AS}=21A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^\circ C$

Switching Time Waveform

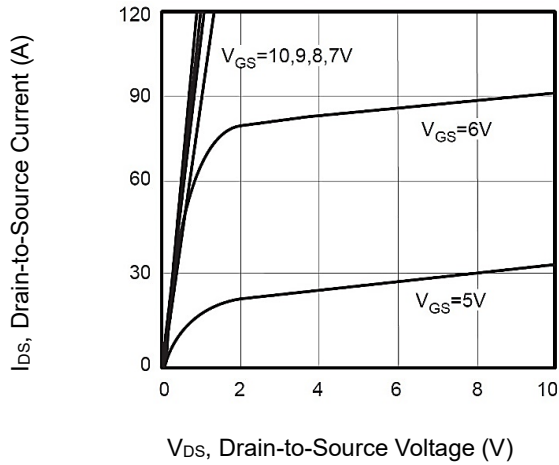


Switching Test Circuit

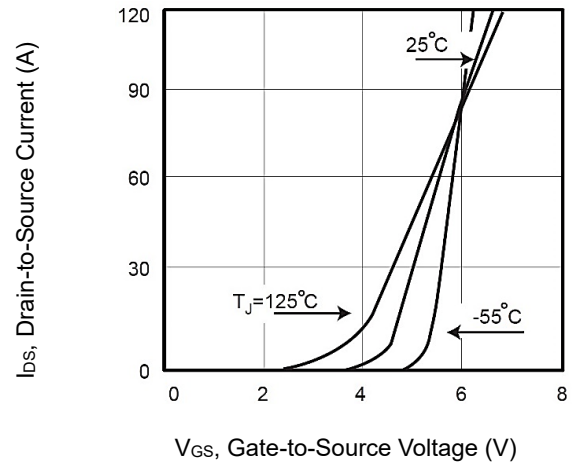


CHARACTERISTIC CURVES

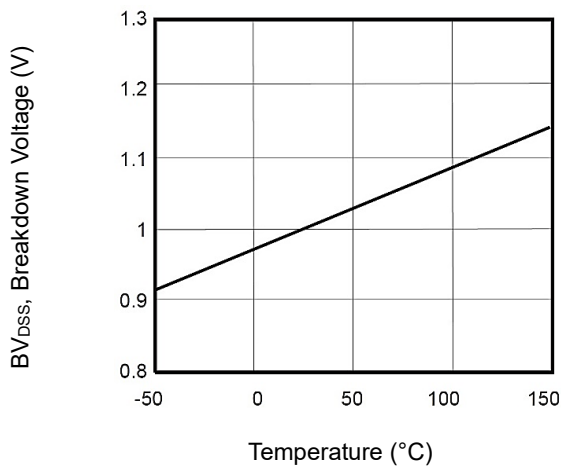
Output Characteristics



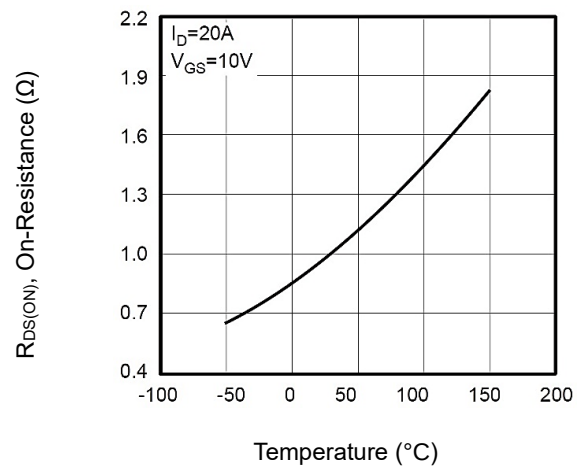
Transfer Characteristics



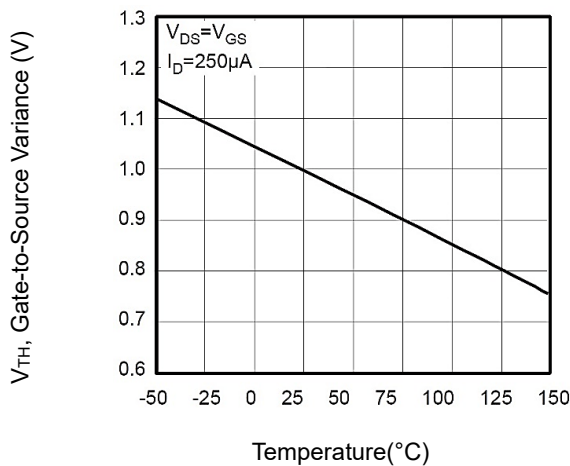
Breakdown Voltage vs. Temperature



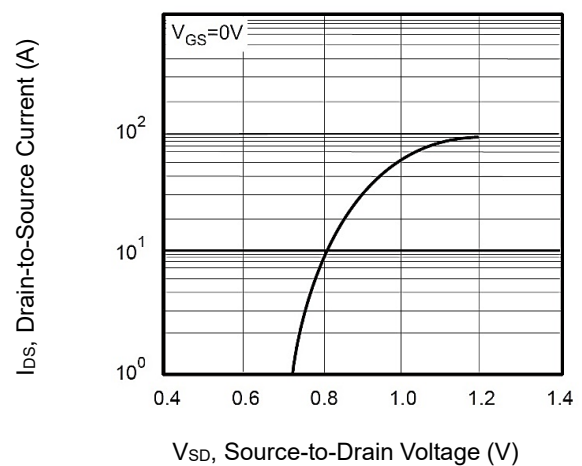
On-Resistance vs. Junction temperature



Threshold Voltage Variance vs. Temperature



Body Diode Characteristics



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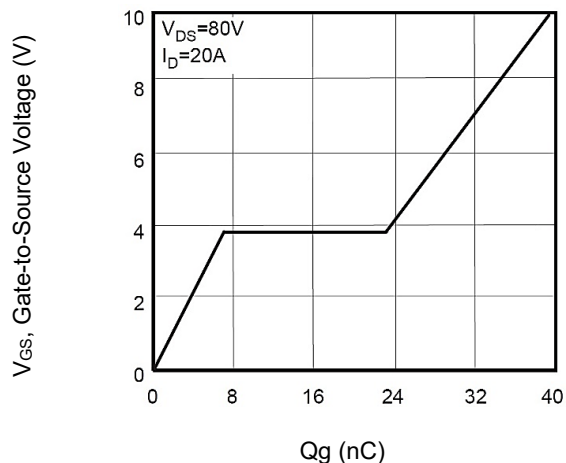
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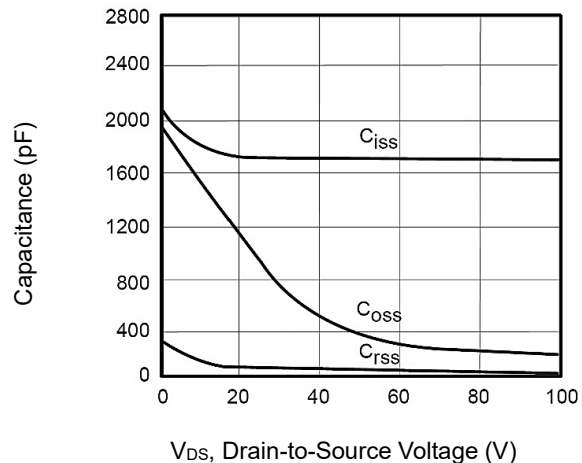
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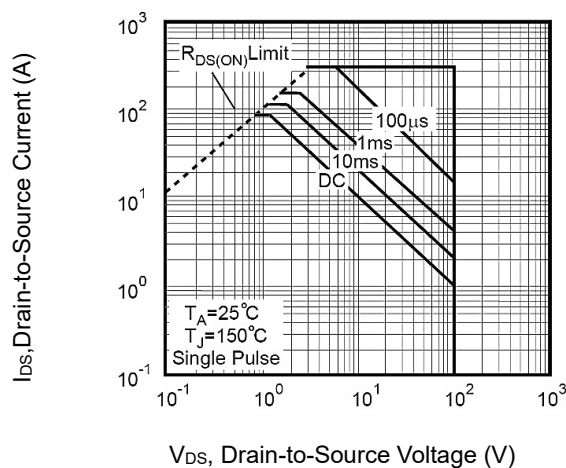
Gate-Charge Characteristics



Capacitance vs. Drain-Source Voltage



Maximum Safe Operating Area



Normalized Transient Thermal Impedance vs Pulse Width

