

N-Channel MOSFET

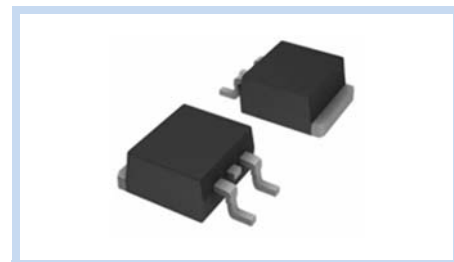
200V 63A 200W TO-263

MFT20N63T263

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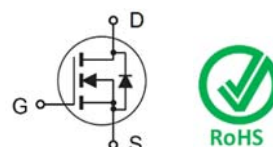
FEATURE

- $R_{DS(ON)} < 21m\Omega$, $V_{GS}=10V$, $I_D=63A$
- High Power and Current Handling Capability
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$



MECHANICAL DATA

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

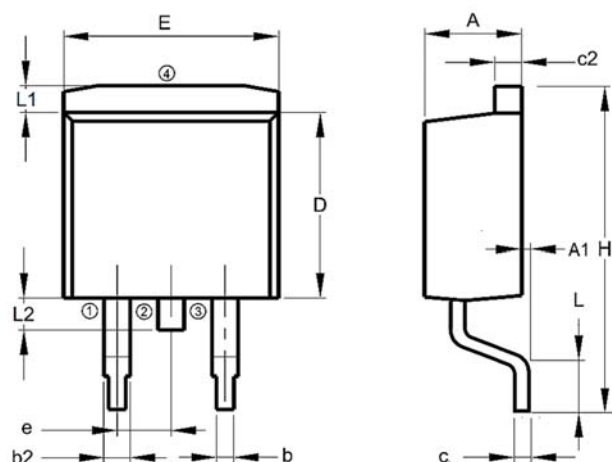


MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current – Continuous	$T_C=25^\circ C$	I_D	63	A
	$T_C=100^\circ C$		45	A
Drain Current – Pulsed		I_{DM}	252	A
Power Dissipation	$T_C=25^\circ C$	P_D	200	W
	Derate above $25^\circ C$		1.33	W/ $^\circ C$
Single Pulsed Avalanche Energy		E_{AS}	320	mJ
Single Pulsed Avalanche Current		I_{AS}	40	A
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	62.5	$^\circ C/W$
Thermal Resistance Junction to Case		$R_{\theta JC}$	0.75	$^\circ C/W$
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to 175	$^\circ C$

DIMENSIONS

Item	Min (mm)	Max (mm)
A	4.45	4.70
A1	--	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	--	1.40
L2	0.96	1.78



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

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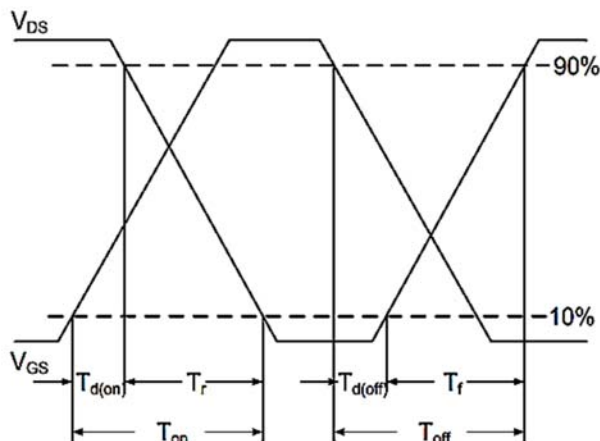
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	200	-	-	V
Drain-Source Leakage Current	$V_{DS}=80V, V_{GS}=0V$	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	$V_{GS}=10V, I_D=30A$	$R_{DS(ON)}$	-	16	21	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	$V_{DS}=160V, V_{GS}=10V, I_D=20A$	Q_g	-	39	-	nC
Gate-Source Charge		Q_{gs}	-	10	-	
Gate-Drain Charge		Q_{gd}	-	10	-	
Turn-On Delay Time	$V_{DD}=160V, V_{GS}=10V, R_G=2.5\Omega, I_D=20A$	$T_{d(on)}$	-	22	-	ns
Rise Time		T_r	-	9	-	
Turn-Off Delay Time		$T_{d(off)}$	-	50	-	
Fall Time		T_f	-	17	-	
Input Capacitance	$V_{DS}=30V, V_{GS}=0V, F=1MHz$	C_{iss}	-	2015	-	pF
Output Capacitance		C_{oss}	-	1250	-	
Reverse Transfer Capacitance		C_{rss}	-	20	-	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	--	I_S	-	-	63	A
Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	V_{SD}	-	-	1.2	V
Reverse Recover Time	$V_R=100V, I_F=20A, dI_F/dt=100A/\mu s$	T_{rr}	-	110	-	ns
Reverse Recover Charge		Q_{rr}	-	425	-	nC

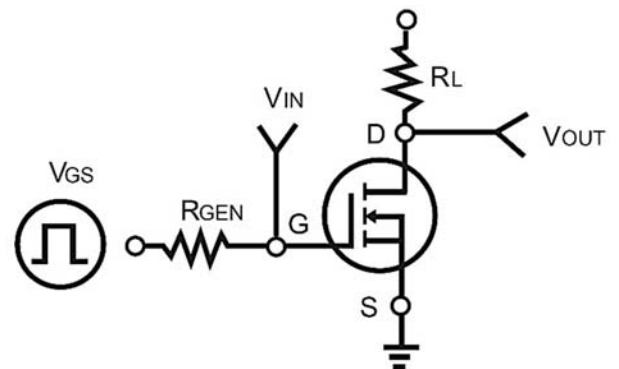
Note:

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.
6. Full Package $I_{S(MAX)}=22A$, V_{SD} test condition $I_S=22A$.
7. $L=0.4mH$, $I_{AS}=40A$, $V_{DD}=50V$, $R_G=25\Omega$, Starting $T_J=25^\circ C$

Switching Time Waveform



Switching Test Circuit



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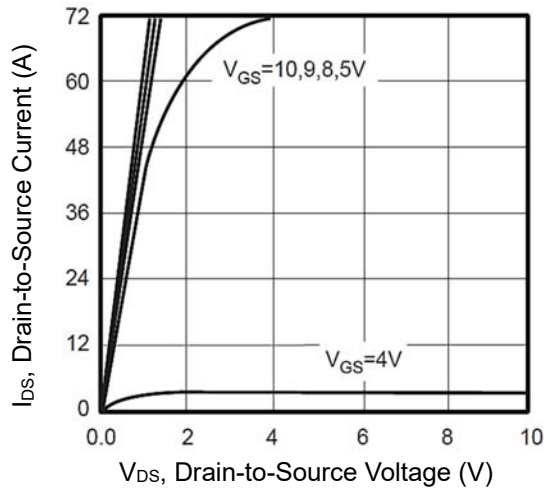
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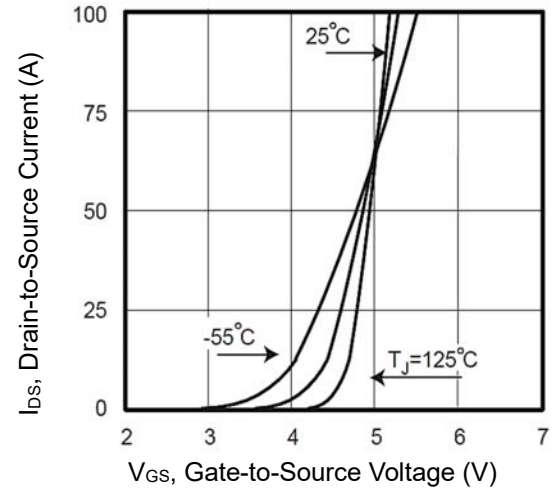
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CHARACTERISTIC CURVES

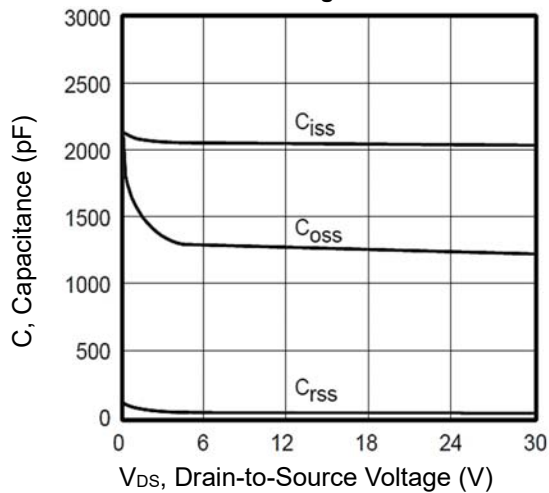
Output Characteristics



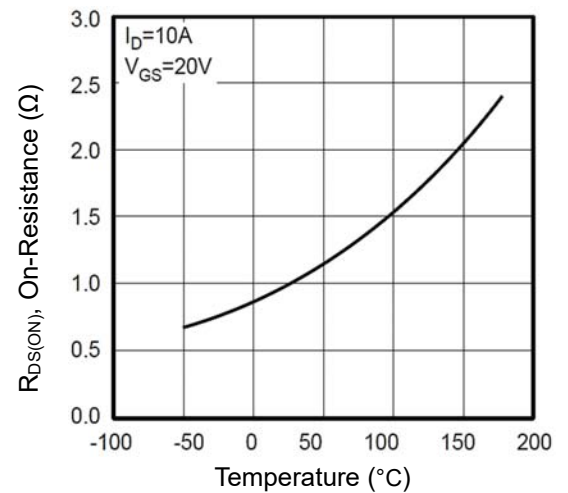
Transfer Characteristics



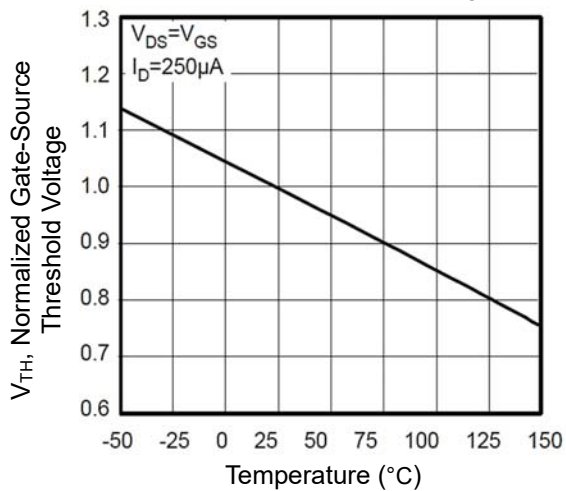
Capacitance vs. Drain to Source Voltage



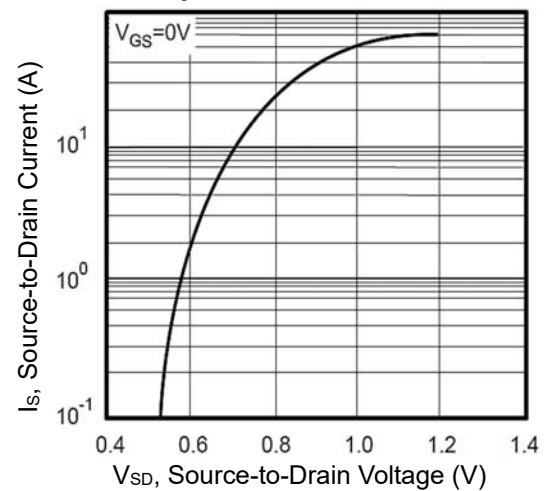
On-Resistance vs. Junction temperature



Gate Threshold Variation vs Temperature



Body Diode Characteristics



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CHARACTERISTIC CURVES

