

N-Channel MOSFET

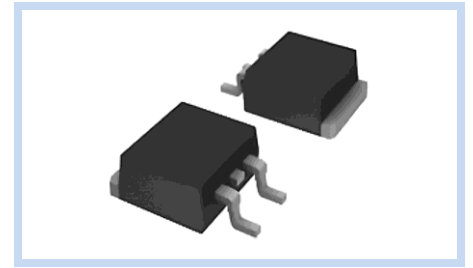
150V 140A 320W TO-263

MFT15N140T263

MERITEK

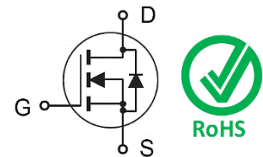
FEATURE

- $R_{DS(ON)} < 6.4m\Omega$ at $V_{GS}=10V$, $I_D=70A$
- 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



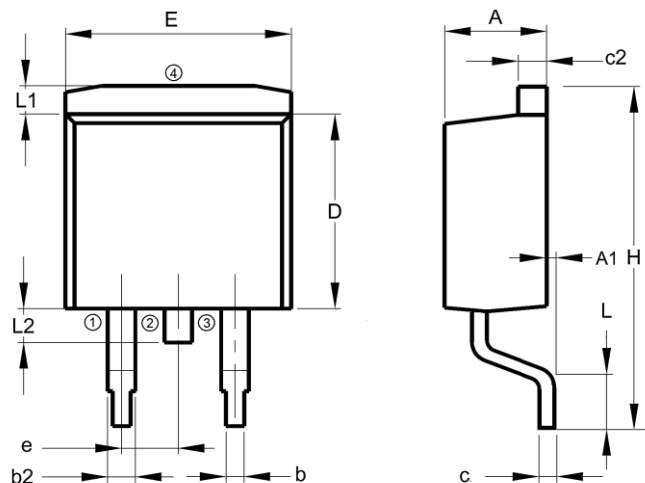
MAXIMUM RATINGS

Parameter, $T_C = 25^\circ C$		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current – Continuous	$T_C = 25^\circ C$	I_D	140	A
	$T_C = 100^\circ C$		100	
Drain Current – Pulsed		I_{DM}	560	A
Power Dissipation		P_D	320	W
Single Pulse Avalanche Energy		E_{AS}	1296	mJ
Thermal Resistance Junction to Case		$R_{\theta JC}$	0.47	$^\circ C/W$
Operating Junction Temperature		T_J	175	$^\circ C$
Storage Temperature Range		T_{STG}	-55 to +175	$^\circ C$

DIMENSIONS

Item	Min (mm)	Max (mm)
A	4.20	4.67
A1	-	0.25
b	0.70	0.91
b2	1.17	1.75
c	0.31	0.60
c2	1.15	1.40
D	8.50	9.30
E	9.80	10.36
e	2.54 BSC	
H	14.61	15.88
L	1.78	2.79
L1	1.36 REF	
L2	1.50 REF	

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



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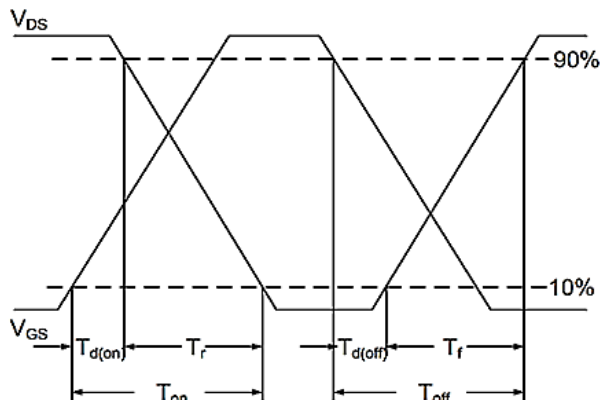
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ELECTRICAL CHARACTERISTICS

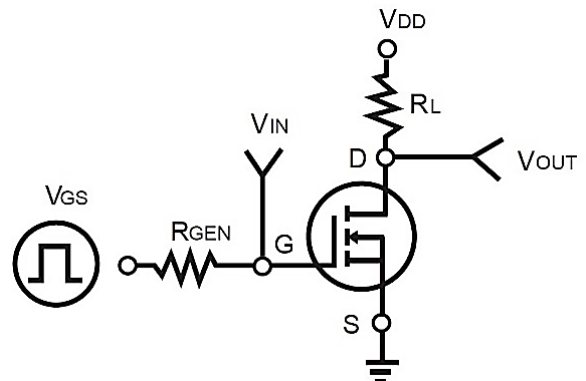
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	150	--	--	V
Drain-Source Leakage Current	$V_{DS}=150V, V_{GS}=0V$	I_{DSS}	--	--	1	μA
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	--	--	± 100	nA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=70A$	$R_{DS(ON)}$	--	5.6	6.4	m Ω
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	2	3	4	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=75V, V_{GS}=10V, I_D=70A$	Q_g	--	80	--	nC
Gate-Source Charge		Q_{gs}	--	32	--	
Gate-Drain Charge		Q_{gd}	--	22	--	
Turn-On Delay Time	$V_{DD}=75V, V_{GS}=10V, I_D=70A, R_G=4.7\Omega$	$T_{d(on)}$	--	26	--	nS
Rise Time		T_r	--	36	--	
Turn-Off Delay Time		$T_{d(off)}$	--	47	--	
Fall Time		T_f	--	15	--	
Input Capacitance	$V_{DS}=75V, V_{GS}=0V, F=1MHz$	C_{iss}	--	6000	--	pF
Output Capacitance		C_{oss}	--	690	--	
Reverse Transfer Capacitance		C_{rss}	--	24	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Current	--	I_S	--	--	140	A
Diode Forward Voltage	$V_{GS}=0V, I_F=I_S$	V_{SD}	--	--	1.2	V
Reverse Recovery Time	$I_F=I_S, dI/dt=100A/\mu s, T_J=25^\circ C$	T_{rr}	--	146	--	nS
Reverse Recovery Charge		Q_{rr}	--	485	--	nC

Note: EAS test condition is $T_J=25^\circ C, V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_G=25\Omega$.

Switching Time Waveform

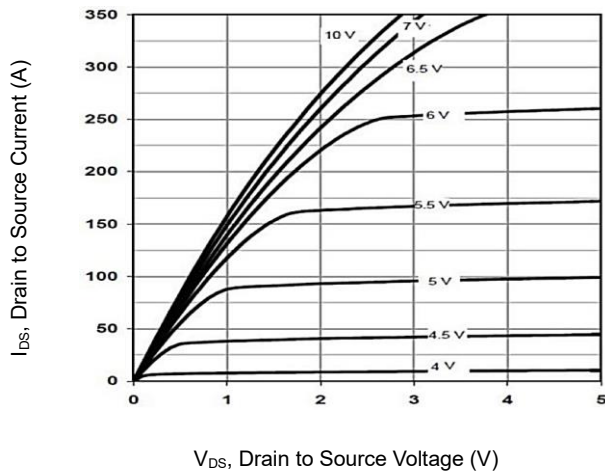


Switching Test Circuit

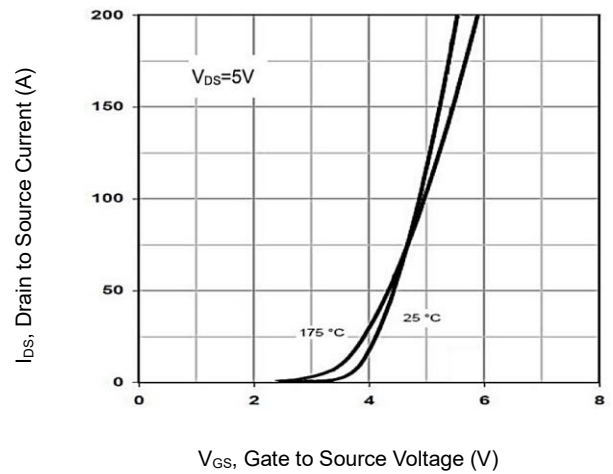


CHARACTERISTIC CURVES

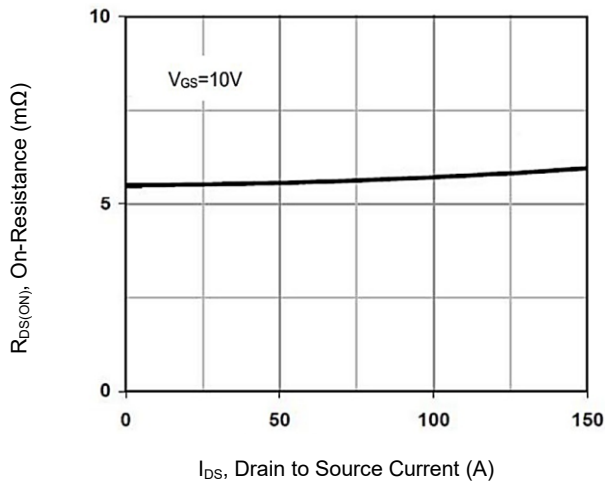
On-Region Characteristics



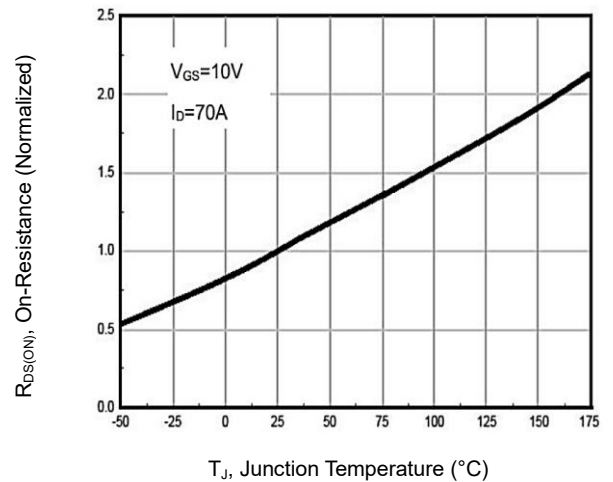
Transfer Characteristics



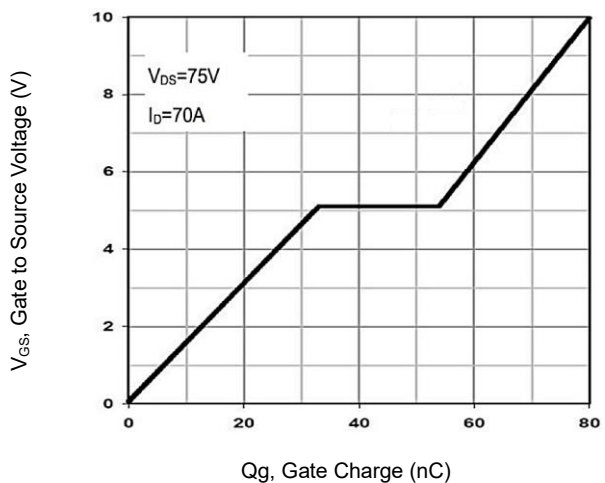
On-Resistance vs. Drain Current



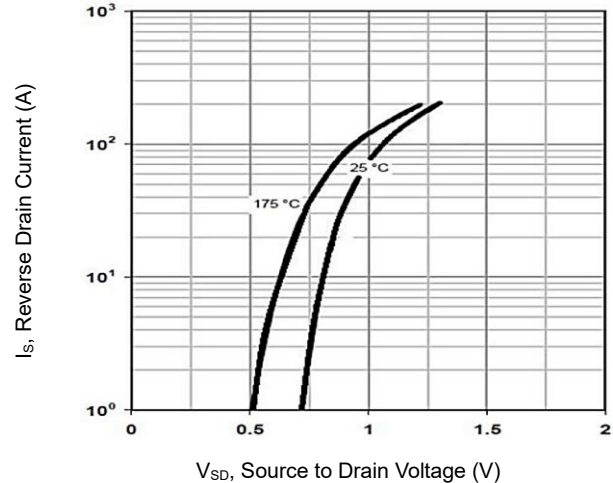
On-Resistance vs. Junction Temperature



Gate Charge



Body Diode Forward Voltage



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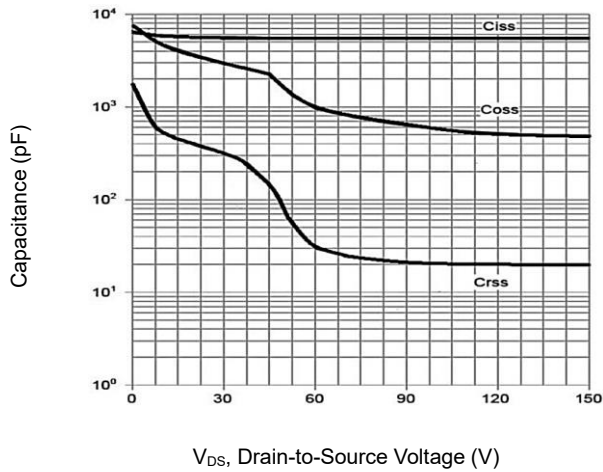
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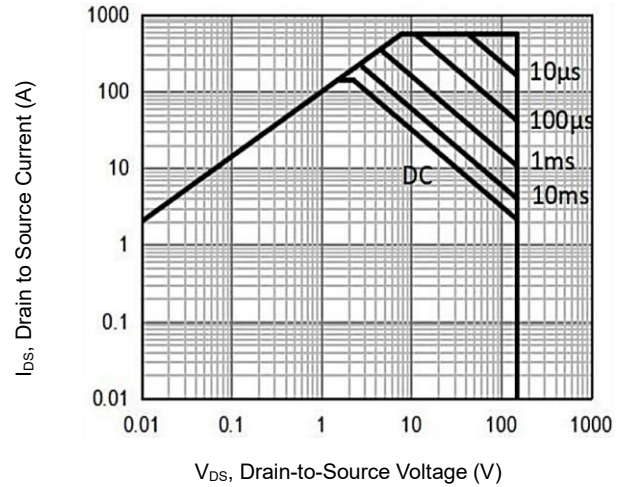
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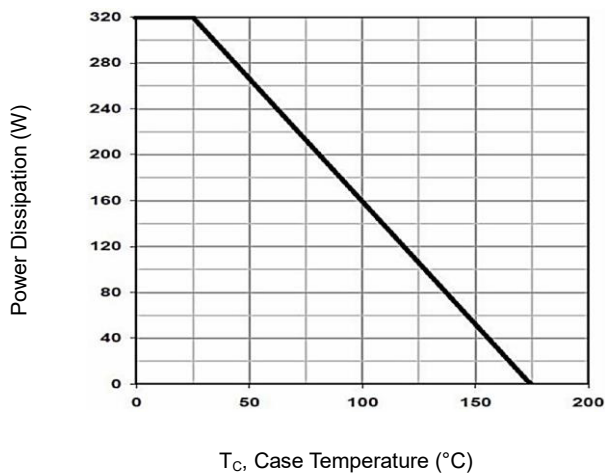
Capacitance vs. Drain-Source Voltage



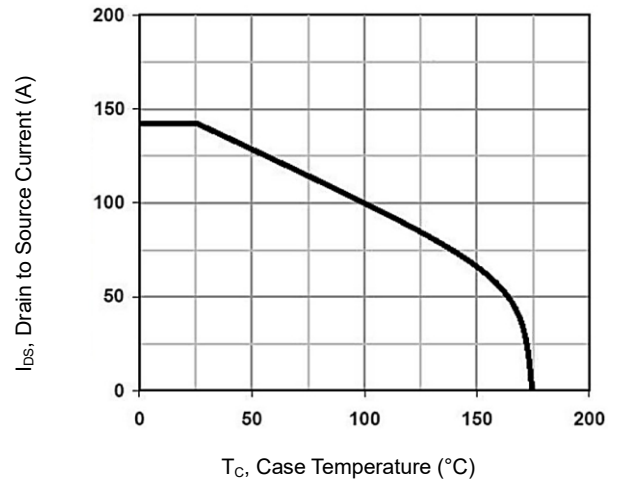
Maximum Safe Operating Area



Power Derating Curve



Current Derating Curve



Normalized Maximum Transient Thermal Impedance

