

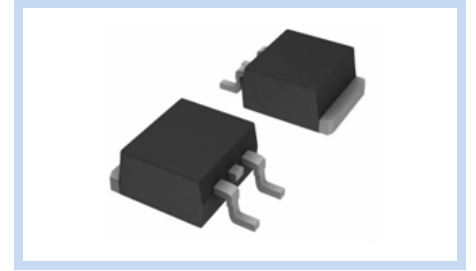
# N-Channel MOSFET 200V 15A TO-252

MFT20N15T252

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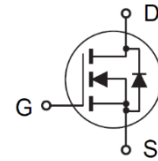
## FEATURE

- $R_{DS(ON)} < 0.15m\Omega$ ,  $V_{GS}=10V$ ,  $I_D=10A$
- Super high density cell design for low on state resistance
- High Power And Current Handling Capability



## MECHANICAL DATA

- Case: TO-252 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

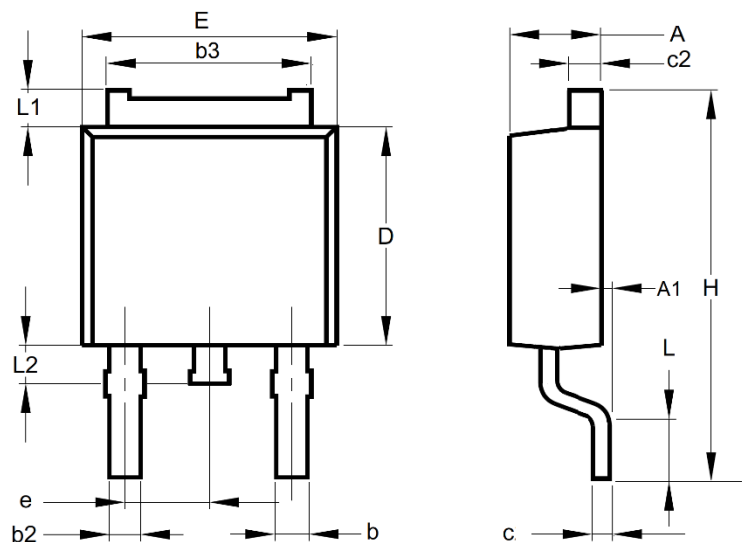


## MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	200	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current – Continuous ( $T_C = 25^\circ C$ )	$I_D$	15	A
Drain Current – Pulsed	$I_{DM}$	60	A
Power Dissipation ( $T_C = 25^\circ C$ )	$P_D$	83	W
Power Dissipation (Derate above $25^\circ C$ )		0.66	W/ $^\circ C$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.8	$^\circ C/W$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	50	$^\circ C/W$

## 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



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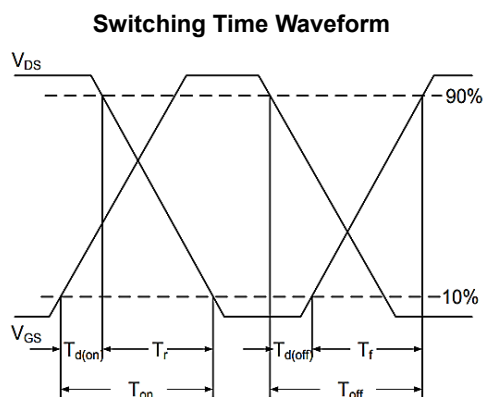
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## ELECTRICAL CHARACTERISTICS

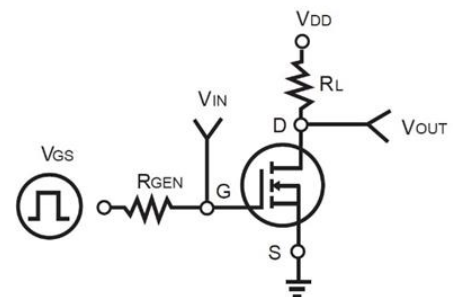
Static Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	$BV_{DSS}$	200	--	--	V
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	2	--	4	V
Gate Leakage Current, Forward	$V_{DS}=0V, V_{GS}=20V$	$I_{GSSF}$	--	--	100	nA
Gate Leakage Current, Reverse	$V_{DS}=0V, V_{GS}=-20V$	$I_{GSSR}$	--	--	-100	
Zero Gate Voltage Drain Current	$V_{DS}=160V, V_{GS}=0V$	$I_{DSS}$	--	--	1	$\mu A$
Drain-Source On-Resistance	$V_{GS}=10V, I_D=10A$	$R_{DS(on)}$	--	0.125	0.15	$\Omega$
Forward Transconductance	$V_{DS}=10V, I_D=9A$	$g_{FS}$	--	9	--	S
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=160V, V_{GS}=10V, I_D=15A$	$Q_g$	--	47	61	nC
Gate-Source Charge		$Q_{gs}$	--	10	--	
Gate-Drain Charge		$Q_{gd}$	--	16	--	
Turn-On Delay Time	$V_{DD}=100V, R_{GEN}=9.1\Omega, I_D=11A, V_{GS}=10V$	$T_{d(on)}$	--	21	42	nS
Rise Time		$T_r$	--	5	10	
Turn-Off Delay Time		$T_{d(off)}$	--	66	132	
Fall Time		$T_f$	--	11	22	
Input Capacitance	$V_{DS}=25V, V_{GS}=0V, F=1.0MHz$	$C_{iss}$	--	1955	--	pF
Output Capacitance		$C_{oss}$	--	355	--	
Reverse Transfer Capacitance		$C_{rss}$	--	55	--	
Drain-Source Diode Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	--	$I_S$	--	--	15	A
Drain-Source Diode Forward Voltage	$I_S=15A, V_{GS}=0V$	$V_{SD}$	--	--	1.5	V

Note:

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. Pulse Test : Pulse Width < 300 $\mu s$ , Duty Cycle < 2%
3. Guaranteed by design, not subject to production testing.
4. L=1mH,  $I_{AS}=25A, V_{DD}=25V, R_G=25\Omega$ , Starting  $T_J=25^\circ C$



**Switching Test Circuit**



# N-Channel MOSFET

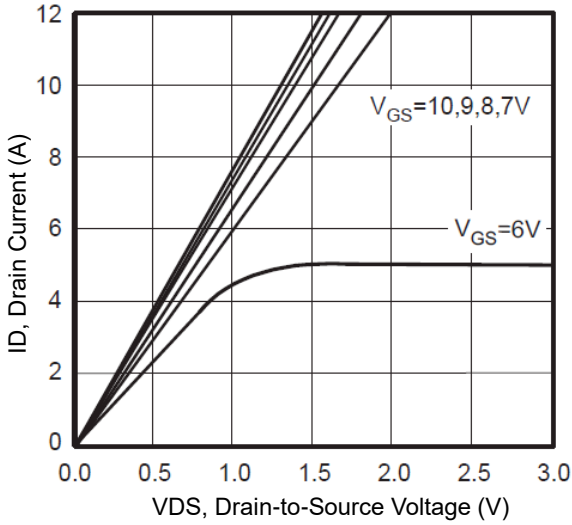
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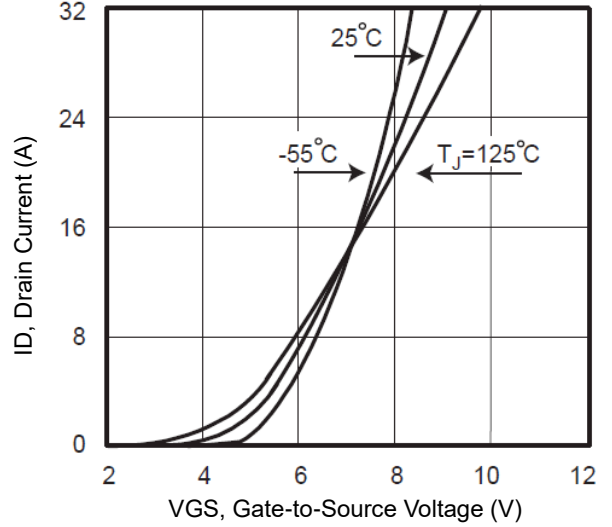
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### CHARACTERISTIC CURVES

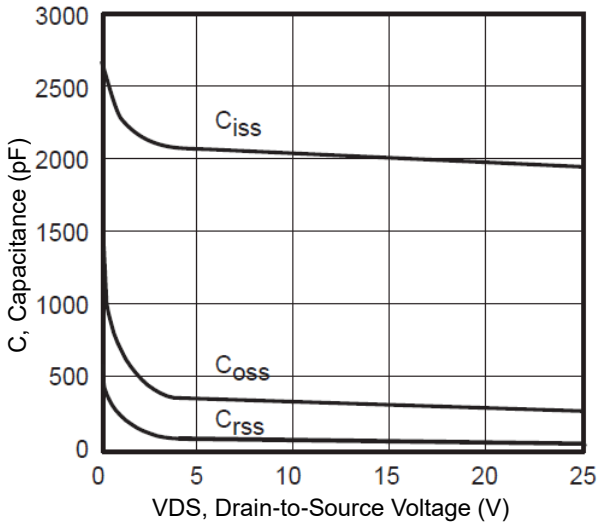
Output Characteristics



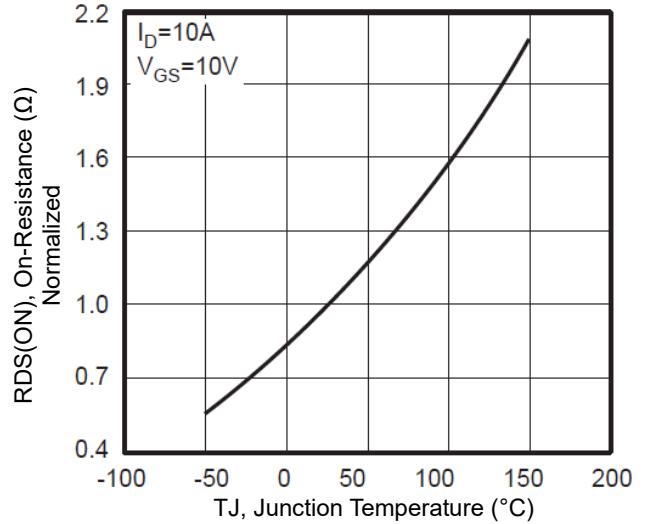
Transfer Characteristics



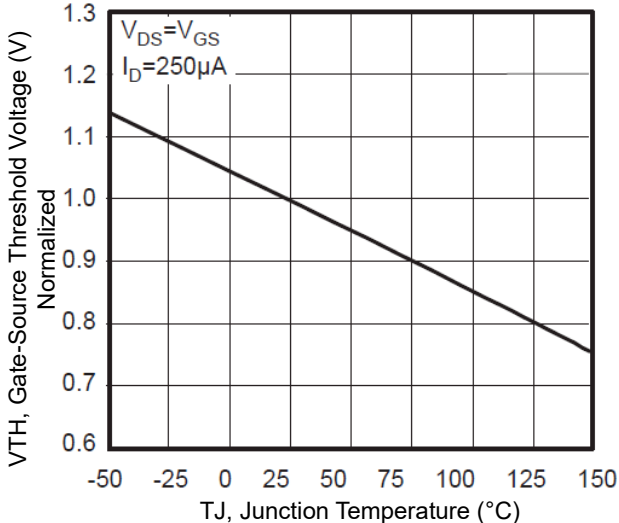
Capacitance



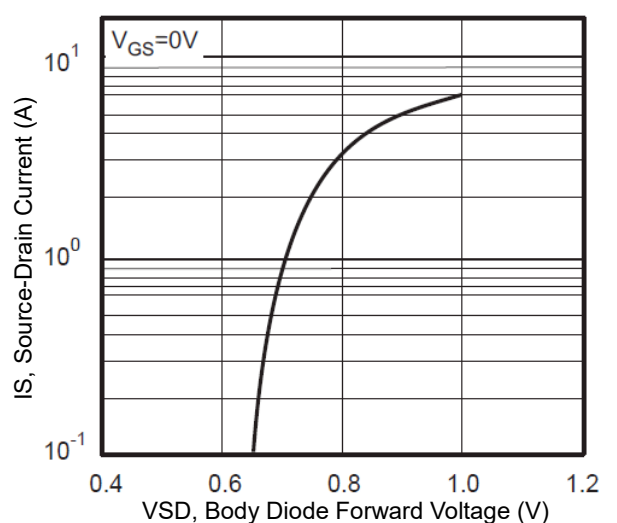
On-Resistance vs.  $T_J$



Gate Threshold Variation vs.  $T_J$



Body Diode Forward Voltage Variation vs.  $I_S$



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## CHARACTERISTIC CURVES

