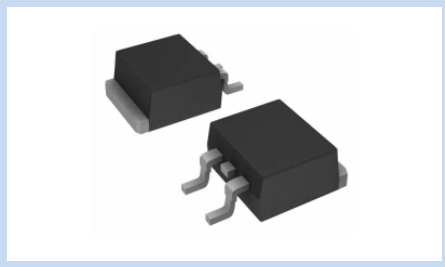
N-Channel MOSFET
800V 2.5A TO-252

MFT90N2A0T252

MERITEK

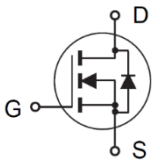
FEATURE

- $R_{DS(ON)}$ <4.8Ω at V_{GS}=10V, I_D=1.2A
- High Power and Current Handing Capability
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$



MECHANICAL DATA

- Case: TO-252 Package No data
- Terminals: Solderable per MIL-STD-750, Method 2026



RoHS

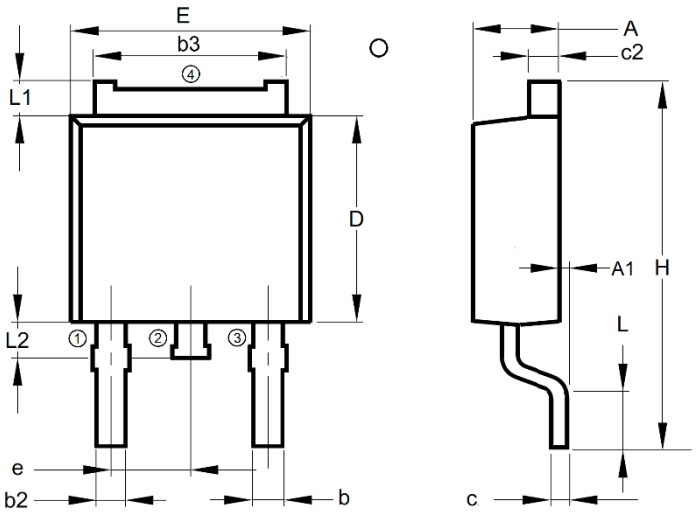
MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	800	V
Gate-Source Voltage		V_{GS}	±30	V
Drain Current – Continuous	T_C=25°C	I_D	2.5	A
Drain Current – Pulsed	T_C=25°C	I_{DM}	10	A
Power Dissipation	T_C=25°C	P_D	75	W
	Derate above 25°C		0.5	W/°C
Single Pulse Avalanche Energy	L = 7mH, I_{AS} =3A V_{DD} = 50V, R_G = 25Ω T_J = 25°C	E_{AS}	32	mJ
Single Pulse Avalanche Current		I_{AS}	3	A
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	50	°C/W
Thermal Resistance Junction to Case		$R_{\theta JC}$	2	°C/W
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to 175	°C

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

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



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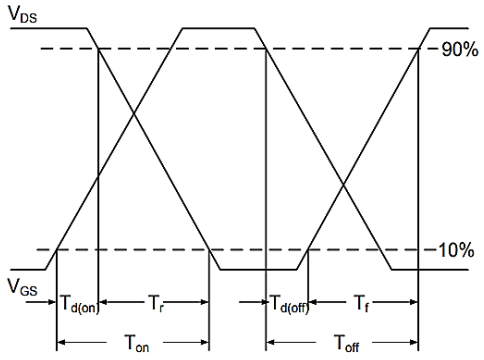
ELECTRICAL CHARACTERISTICS

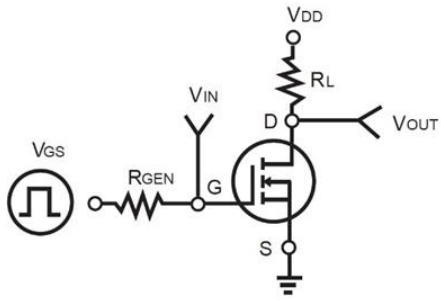
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	BV_{DSS}	800	-	-	V
Drain-Source Leakage Current	V_{DS}=800V, V_{GS}=0V	I_{DSS}	-	-	25	μA
Gate-Body Leakage Current, Forward	V_{GS}=30V, V_{DS}=0V	I_{GSSF}	-	-	100	nA
Gate-Body Leakage Current, Reverse	V_{GS}=-30V, 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=1.2A	$R_{DS(ON)}$	-	3.8	4.8	Ω
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	$V_{GS(th)}$	2	-	4	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=720V, V_{GS}=10V, I_D=2.2A	Q_g	-	16	20	nC
Gate-Source Charge		Q_{gs}	-	3	-	
Gate-Drain Charge		Q_{gd}	-	7	-	
Turn-On Delay Time	V_{DD}=450V, V_{GS}=10V, R_G=25Ω I_D=2.2A	$T_{d(on)}$	-	20	40	ns
Rise Time		T_r	-	34	68	
Turn-Off Delay Time		$T_{d(off)}$	-	44	88	
Fall Time		T_f	-	28	56	
Input Capacitance	V_{DS}=25V, V_{GS}=0V, F=1MHz	C_{iss}	-	690	-	pF
Output Capacitance		C_{oss}	-	70	-	
Reverse Transfer Capacitance		C_{rss}	-	15	-	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Drain-Source Diode Forward Current	-	I_S	-	-	2	A
Diode Forward Voltage	V_{GS}=0V, I_S=2A, T_J=25°C	V_{SD}	-	-	1.2	V

Note:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 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.

Switching Time Waveform

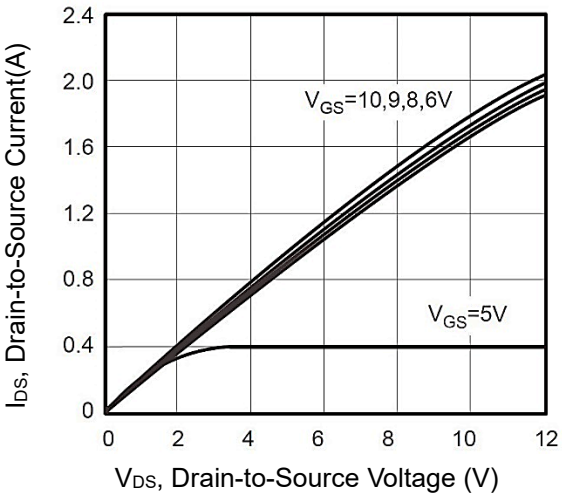


Switching Test Circuit

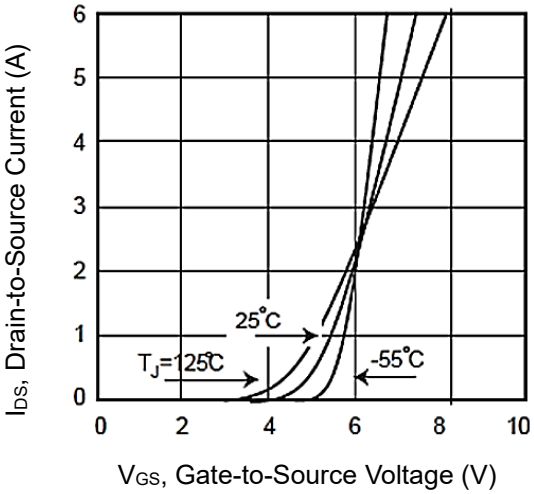


CHARACTERISTIC CURVES

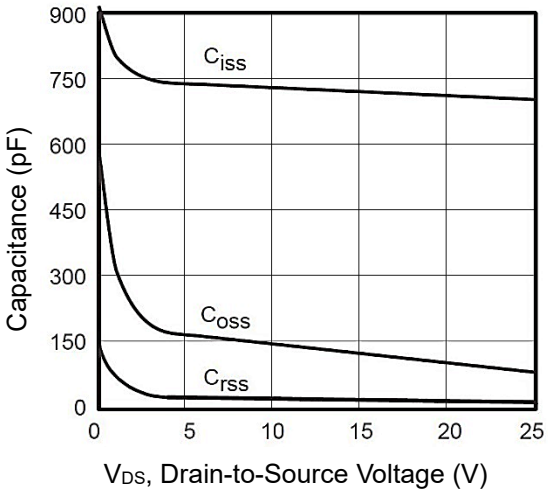
Output Characteristics



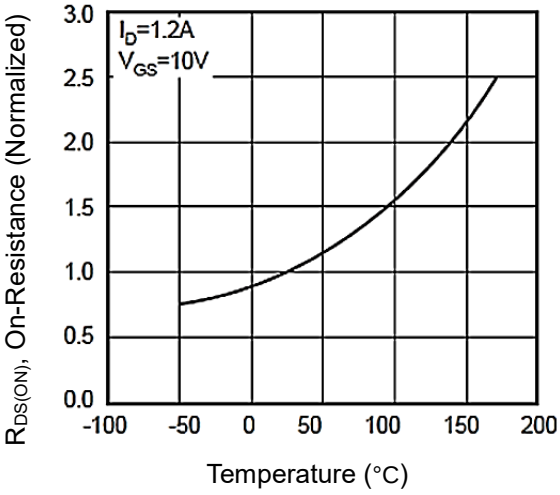
Transfer Characteristics



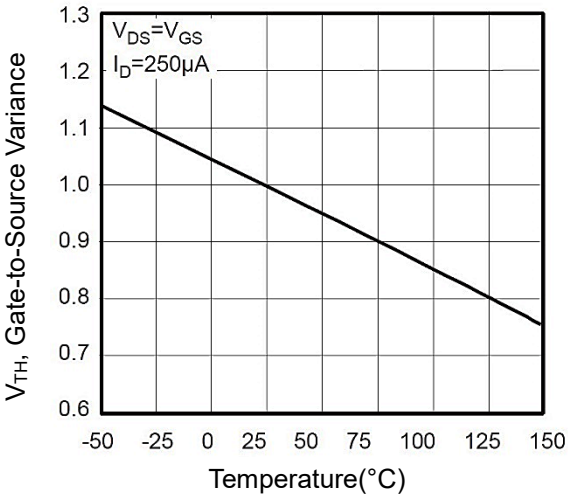
Capacitance vs. Drain-Source Voltage



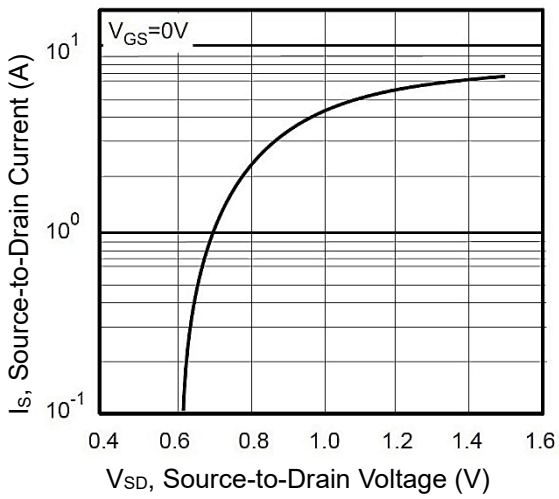
On-Resistance vs. Junction temperature



Threshold Voltage Variation with Temperature

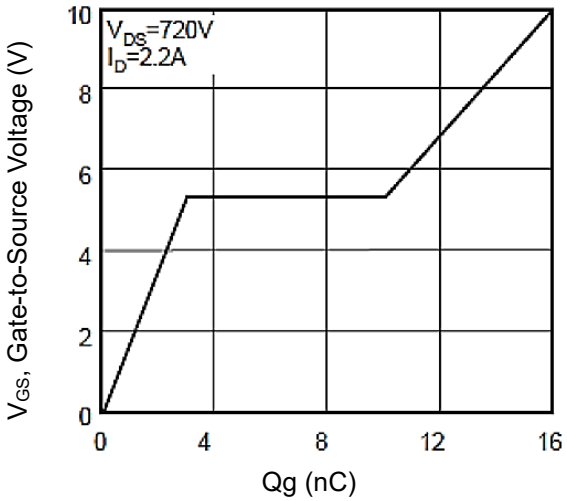


Body Diode Characteristics

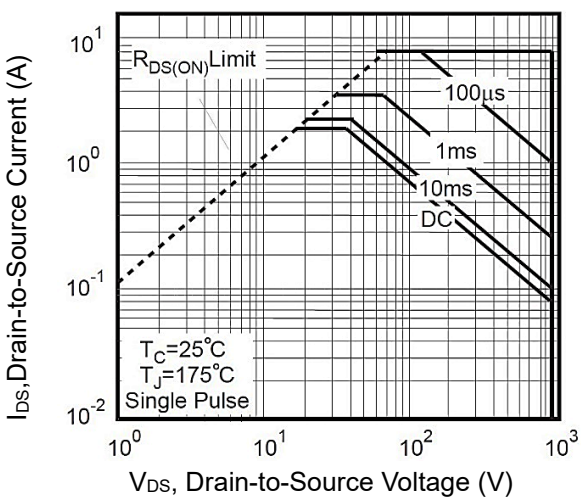


CHARACTERISTIC CURVES

Gate-Charge Characteristics



Maximum Safe Operating Area



Normalized Transient Thermal Impedance vs Pulse Width