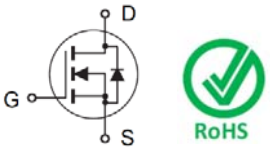
N-Channel MOSFET
1000V 4A 166W TO-263

MFT100N4T263

MERITEK

FEATURE

- $R_{DS(ON)}$<3.8Ω, V_{GS}=10V, I_D=4A
- High Power and Current Handing Capability
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$



MECHANICAL DATA

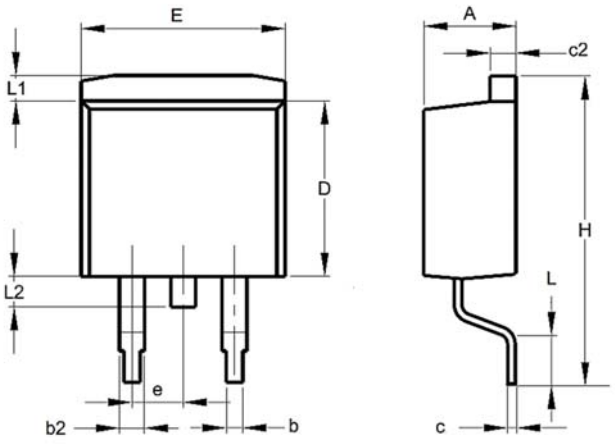
- Case: TO-263 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	1000	V
Gate-Source Voltage		V_{GS}	±30	V
Drain Current – Continuous	T_C=25°C	I_D	4	A
Drain Current – Pulsed	T_C=25°C	I_{DM}	16	A
Power Dissipation	T_C=25°C	P_D	166	W
	Derate above 25°C		1.3	W
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	62.5	°C/W
Thermal Resistance Junction to Case		$R_{\theta JC}$	0.75	°C/W
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to 150	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A	4.45	4.70
b	0.69	0.94
b2	1.22	1.32
c	0.36	0.56
c2	1.22	1.40
D	8.59	9.53
E	9.85	10.57
e	2.29	2.79
H	14.61	15.88
L	2.24	2.82
L1	--	1.40
L2	0.96	1.78



N-Channel MOSFET
1000V 4A 166W TO-263

MFT100N4T263

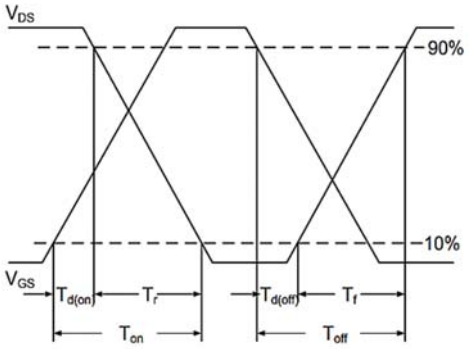
MERITEK

ELECTRICAL CHARACTERISTICS

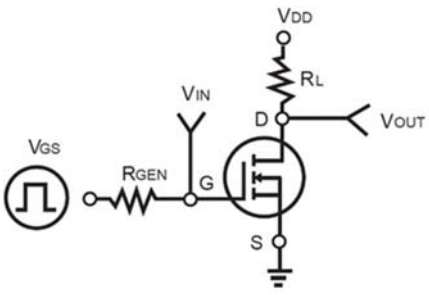
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	BV_{DSS}	1000	--	--	V
Drain-Source Leakage Current	V_{DS}=1000V, V_{GS}=0V	I_{DSS}	--	--	1	μA
Gate-Body Leakage Current, Forward	V_{GS}=30V, V_{DS}=0V	I_{GSSF}	--	--	100	nA
Gate-Body Leakage Current, Reverse	V_{GS}=-30V, V_{DS}=0V	I_{GSSR}	--	--	-100	
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=4A	$R_{DS(ON)}$	--	3	3.8	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}=480V, V_{GS}=10V, I_D=4A	Q_g	--	27	--	nC
Gate-Source Charge		Q_{gs}	--	7	--	
Gate-Drain Charge		Q_{gd}	--	7	--	
Turn-On Delay Time	V_{DD}=300V, V_{GS}=10V, R_G=25Ω I_D=4A	$T_{d(on)}$	--	33	--	ns
Rise Time		T_r	--	17	--	
Turn-Off Delay Time		$T_{d(off)}$	--	82	--	
Fall Time		T_f	--	25	--	
Input Capacitance	V_{DS}=25V, V_{GS}=0V, F=1MHz	C_{iss}	--	1390	--	pF
Output Capacitance		C_{oss}	--	115	--	
Reverse Transfer Capacitance		C_{rss}	--	15	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Drain-Source Diode Forward Current	--	I_S	--	--	4	A
Diode Forward Voltage	V_{GS}=0V, I_S=4A, T_J=25°C	V_{SD}	--	--	1.4	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.
6. Full Package $I_{S(MAX)}$=2.2A
7. Full Package V_{SD} test condition I_S = 2.2A

Switching Time Waveform

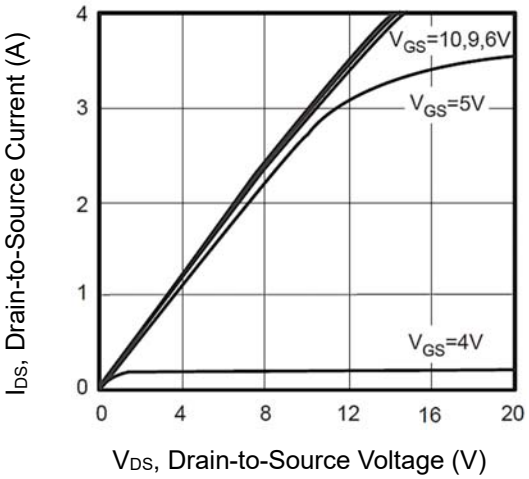


Switching Test Circuit

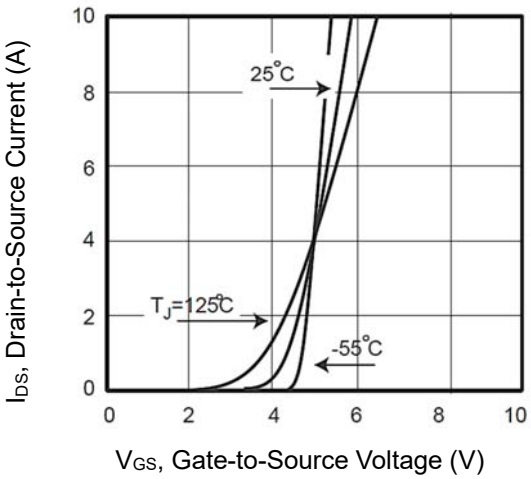


CHARACTERISTIC CURVES

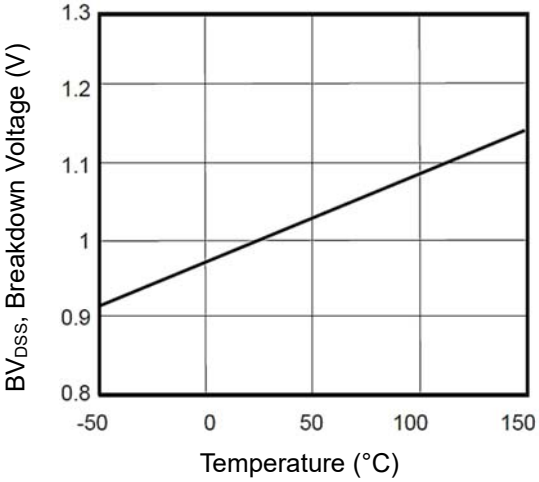
Output Characteristics



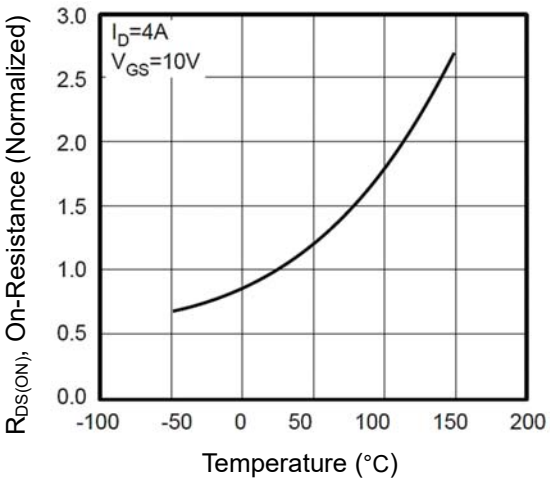
Transfer Characteristics



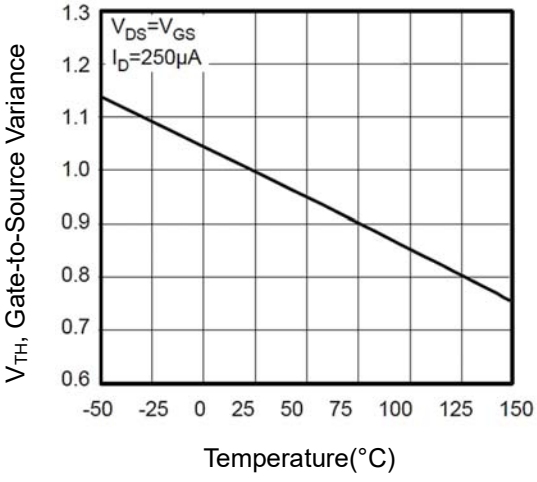
Breakdown Voltage vs. Temperature



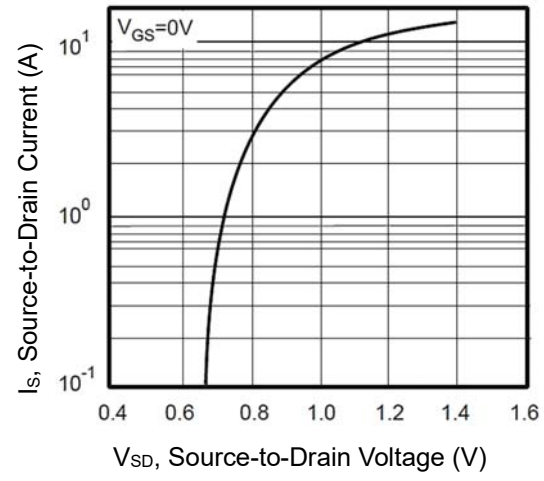
On-Resistance vs. Junction temperature



Threshold Voltage Variation with Temperature

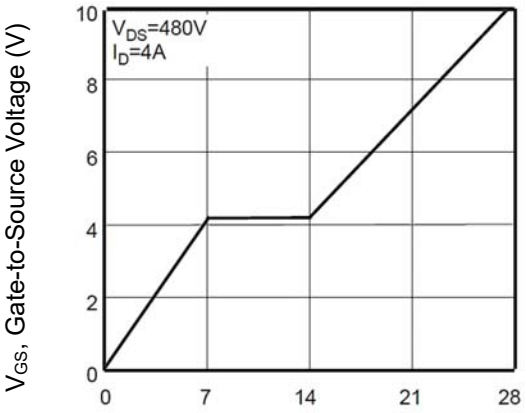


Body Diode Characteristics

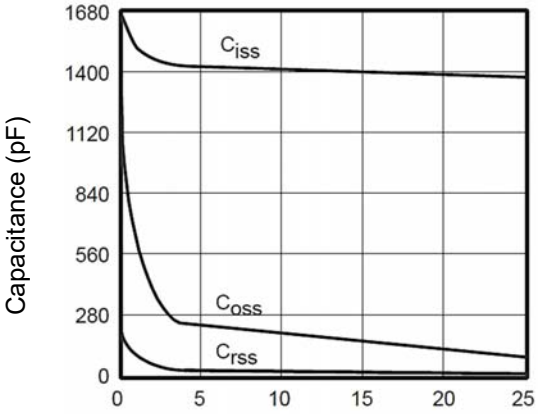


CHARACTERISTIC CURVES

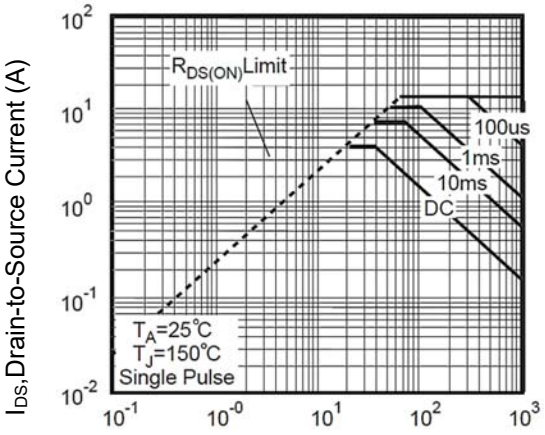
Gate-Charge Characteristics



Capacitance vs. Drain-Source Voltage



Maximum Safe Operating Area



Normalized Transient Thermal Impedance vs Pulse Width