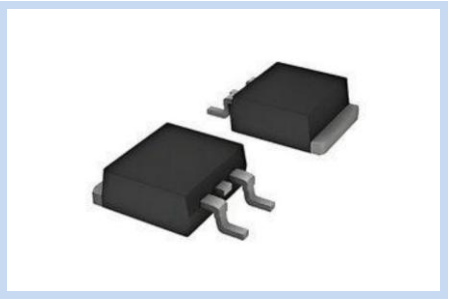
N Channel MOSFET
200V 99A 277W TO-263

MFT20N99T263

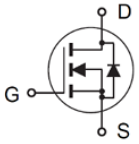
MERITEK

FEATURES



- $R_{DS(ON)}$<10.7mΩ at V_{GS}=10V
- High Current Capability, Enabling Reliable Operation in Demanding Power Conversion
- Fast Switching Characteristics Improve Power Density and System Performance
- Higher Energy Efficiency Through Reduced Power Loss and Lower Heat Generation

APPLICATIONS



RoHS

- Renewable Energy: Solar Inverters, Energy Storage Systems (ESS), and Power Optimizers
- Industrial Automation: Motor Drives, Robotics, Factory Automation, and Process Control
- Power Infrastructure: UPS, Power Distribution, and Backup Power Solutions.

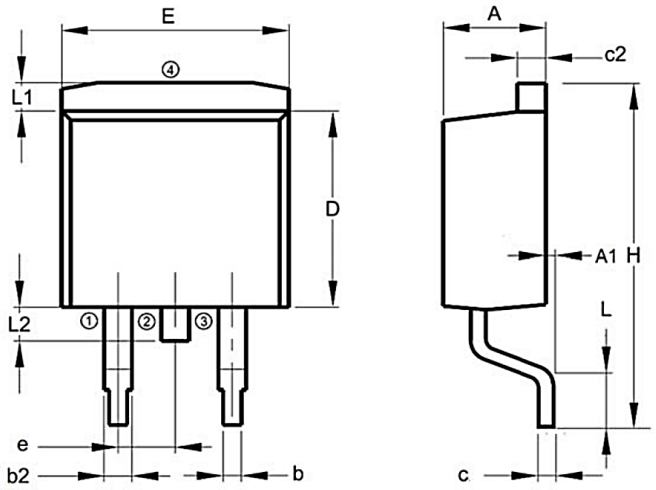
MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	V_{GS}=10V, T_C=25°C, Chip Limit	I_D	99	A
	V_{GS}=10V, T_C=100°C		70	
Pulsed Drain Current	t_p ≤10μs	I_{DM}	396	A
Power Dissipation		P_D	277	W
Single Pulse Avalanche Energy		E_{AS}	625	mJ
Thermal Resistance Junction to Case		$R_{\theta JC}$	0.54	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +175	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A	4.43	4.73
A1	0.00	0.25
b	0.72	0.92
b2	1.18	1.38
c	0.33	0.45
c2	1.22	1.34
D	8.55	8.85
E	10.00	10.30
e	2.54 BSC	
H	14.50	15.50
L	1.79	2.79
L1	1.12	1.42
L2	0.77	1.77

Note: Pin1: Gate; Pin2,4: Drain; Pin3: Source



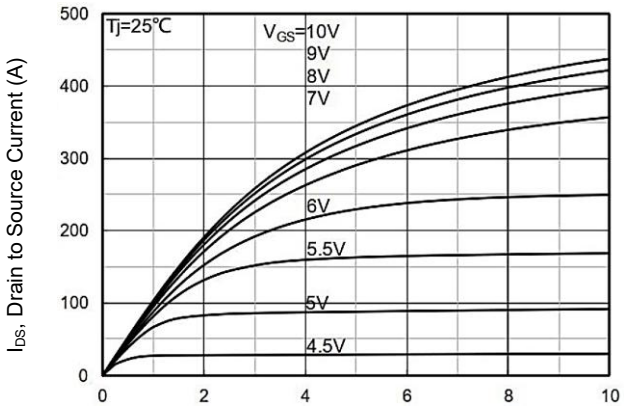
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	**BV_{DSS}**	200	--	--	V
Drain-Source Leakage Current	V_{DS}=200V, V_{GS}=0V	**I_{DSS}**	--	--	1	μA
Gate-Source Leakage Current	V_{GS}=±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=50A	**$R_{DS(ON)}$**	--	9.3	10.7	mΩ
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	**$V_{GS(th)}$**	2.2	3.0	3.8	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=100V, V_{GS}=10V, I_D=50A	**Q_g**	--	50.5	--	nC
Gate-Source Charge		**Q_{gs}**	--	18.4	--	
Gate-Drain Charge		**Q_{gd}**	--	8.2	--	
Turn-On Delay Time	V_{DS}=100V, V_{GS}=10V, R_G=3Ω, I_D=50A	**$T_{d(on)}$**	--	20	--	nS
Rise Time		**T_r**	--	42	--	
Turn-Off Delay Time		**$T_{d(off)}$**	--	32	--	
Fall Time		**T_f**	--	9	--	
Input Capacitance	V_{DS}=100V, V_{GS}=0V, F=1MHz	**C_{iss}**	--	3920	--	pF
Output Capacitance		**C_{oss}**	--	445	--	
Reverse Transfer Capacitance		**C_{rss}**	--	11.3	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Current	T_C=25°C	**I_S**	--	--	99	A
Diode Forward Voltage	V_{GS}=0V, I_S=50A	**V_{SD}**	--	--	1.2	V
Reverse Recovery Time	V_{GS}=0V, V_R=100V, I_F=50A, di/dt=100A/μs	**T_{rr}**	--	135	--	nS
Reverse Recovery Charge		**Q_{rr}**	--	513	--	nC

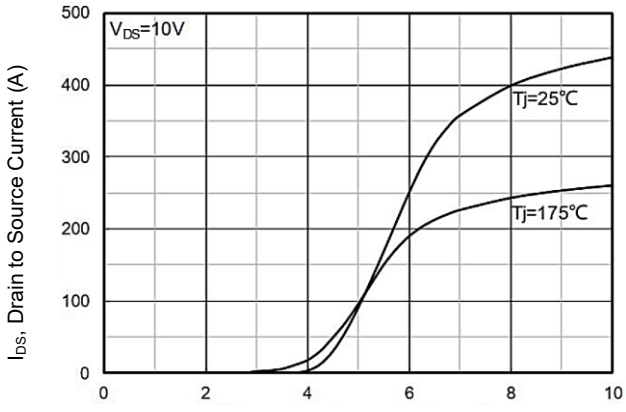
Note:
1. T_C=25°C, unless otherwise noted
2. The entire application environment impacts the thermal resistance values shown, they are not constant and are only valid for the particular conditions noted
3. T_J=25℃, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=50A.
4. Thermal resistance from junction to soldering point (on the exposed drain pad).

CHARACTERISTIC CURVES

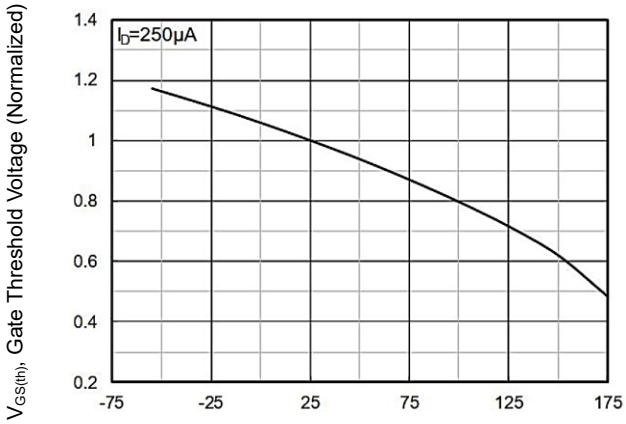
On-Region Characteristics



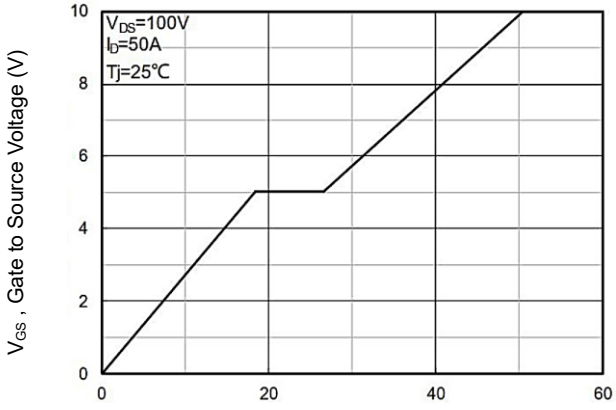
Transfer Characteristics



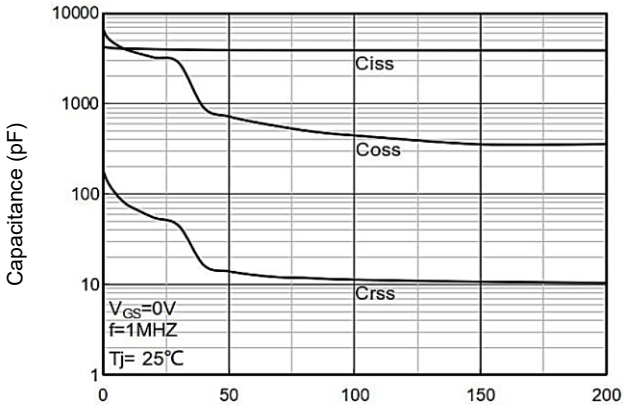
Gate Threshold Voltage vs Temperature



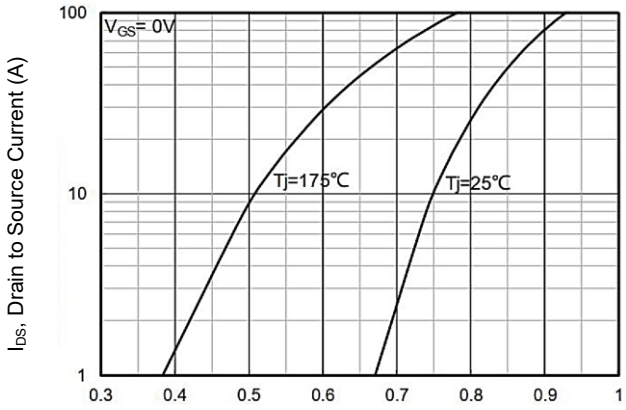
Gate Charge Waveform



Capacitance vs. Drain-Source Voltage

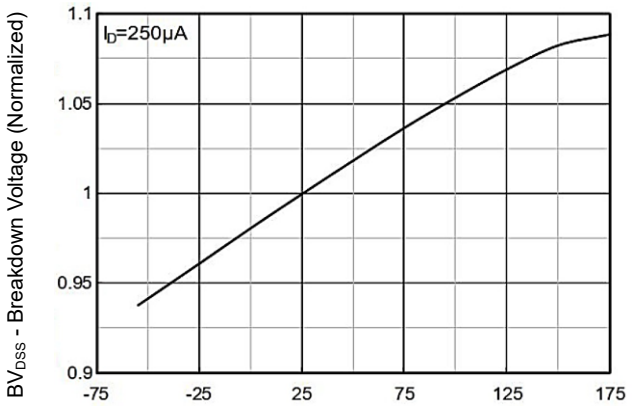


Body Diode Forward Voltage

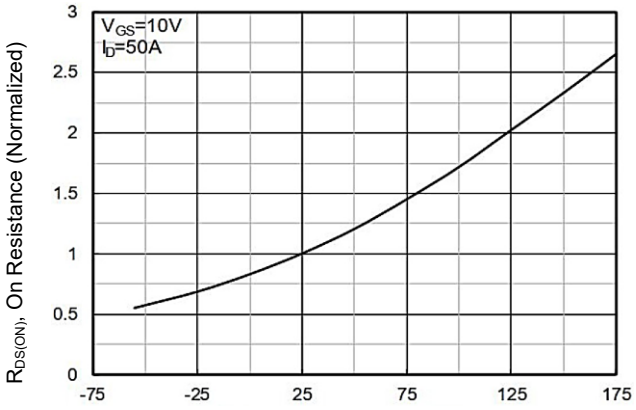


CHARACTERISTIC CURVES

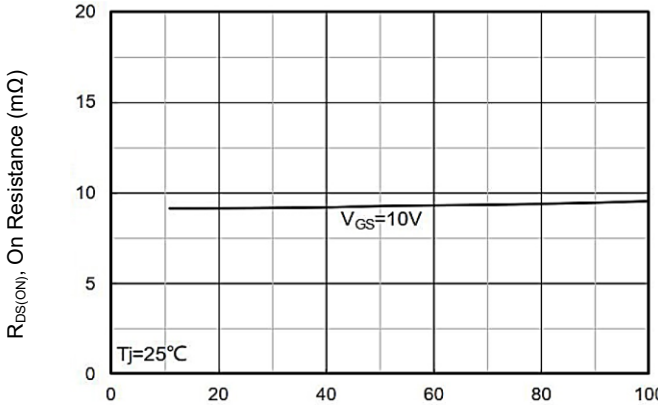
Breakdown Voltage vs Temperature



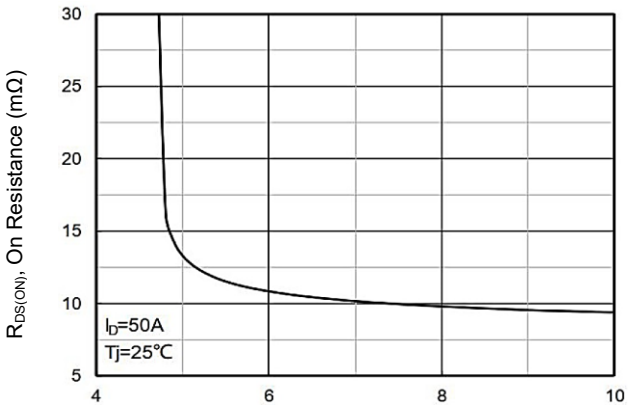
On-Resistance Variation with Temperature



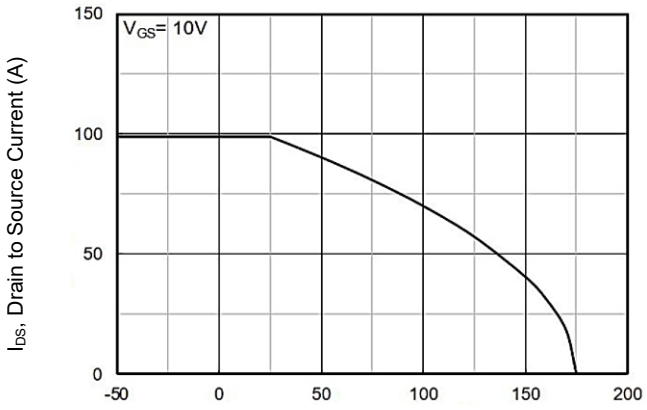
On-Resistance Variation with Drain Current



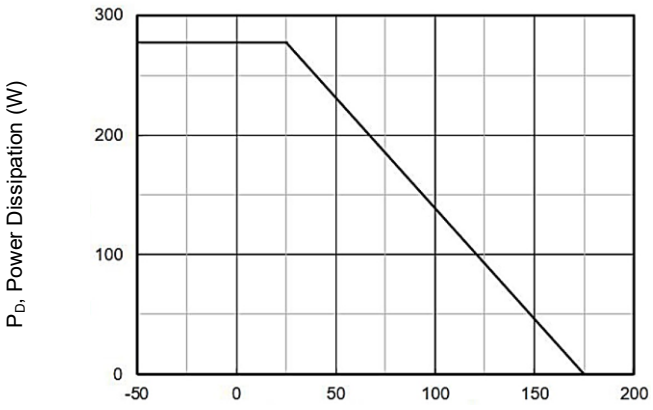
On-Resistance Variation with Gate-Source Voltage



Current Dissipation

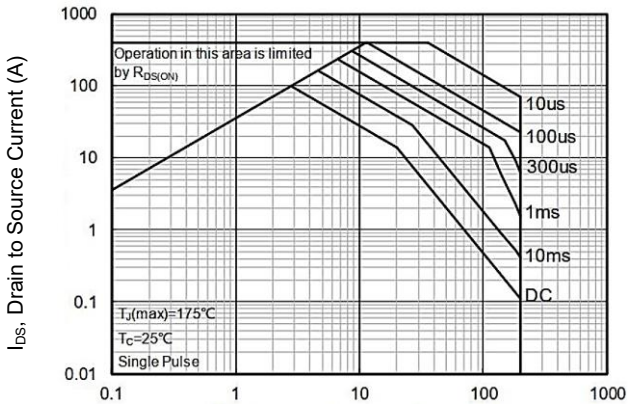


Power Dissipation



CHARACTERISTIC CURVES

Maximum Safe Operating Area



Normalized Transient Thermal Impedance

