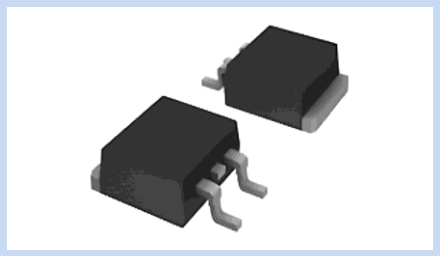
N-Channel MOSFET
650V 36A 346W TO-263

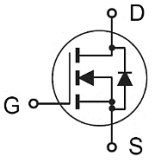
MFT65N36T263

MERITEK

FEATURE

- $R_{DS(ON)}$<99mΩ at V_{GS}=10V, I_D=18A
- High Power and Current Handing Capability
- Super High Dense Cell Design for Low $R_{DS(ON)}$
- Applications: PFC, SMPS, UPS, OBC





RoHS

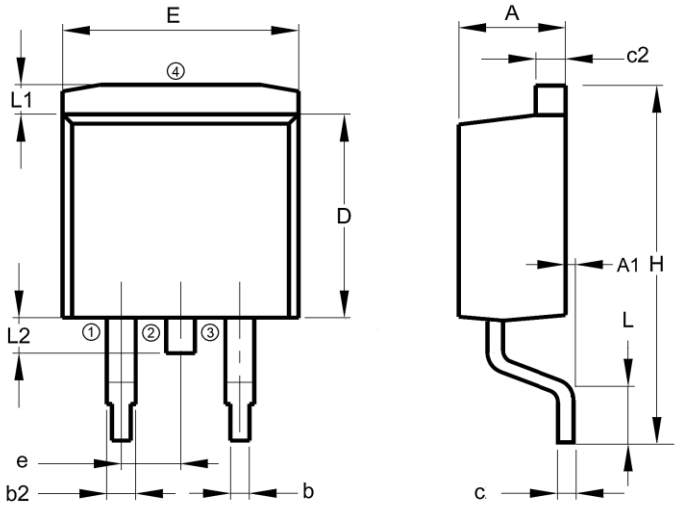
MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	650	V
Gate-Source Voltage	V_{DS}=0V, AC (f>1Hz)	V_{GS}	±30	V
	V_{DS}=0V, DC		±20	
Drain Current – Continuous	T_C=25°C	I_D	36	A
	T_C=100°C		25.2	
Drain Current – Pulsed		I_{DM}	108	A
Power Dissipation	T_C=25°C	P_D	346	W
Single Pulse Avalanche Energy		E_{AS}	324	mJ
Avalanche Current		I_{AS}	9	A
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction to Case		$R_{\theta JC}$	0.43	°C/W
Operating Junction and Storage Temperature		T_J, T_{STG}	-55 to +175	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A	4.06	4.83
A1	--	0.25
b	0.51	0.99
b2	1.14	1.78
c	0.38	0.74
c2	1.14	1.65
D	8.38	9.65
E	9.65	10.00
e	2.54 BSC	
H	14.61	15.88
L	1.78	2.79
L1	--	1.68
L2	--	1.78

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

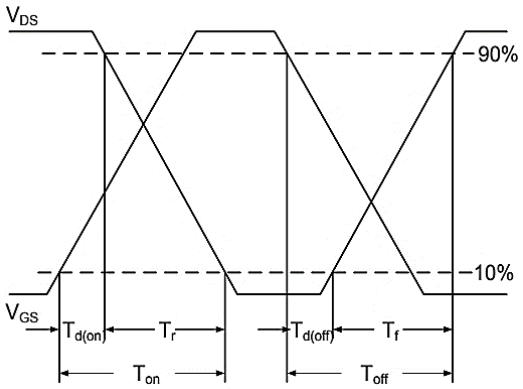


ELECTRICAL CHARACTERISTICS

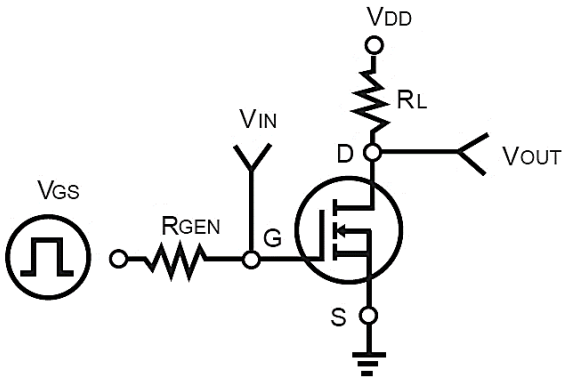
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=1mA	BV_{DSS}	650	--	--	V
Zero Gate Voltage Drain Current	V_{DS}=650V, V_{GS}=0V,T_C=25°C	I_{DSS}	--	--	10	μA
Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	--	--	±100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V, I_D=18A	$R_{DS(ON)}$	--	85	99	mΩ
Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=500μA	$V_{GS(th)}$	3.5	4.2	5.0	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=480V, V_{GS}=10V, I_D=18A	Q_g	--	55	--	nC
Gate-Source Charge		Q_{gs}	--	16.5	--	
Gate-Drain Charge		Q_{gd}	--	25.5	--	
Gate Plateau Voltage		V_{gp}	--	7.3	--	V
Turn-On Delay Time	V_{DD}=380V, V_{GS}=10V, R_G=1.7Ω, I_D=18A	$T_{d(on)}$	--	15	--	nS
Rise Time		T_r	--	14	--	
Turn-Off Delay Time		$T_{d(off)}$	--	72	--	
Fall Time		T_f	--	14	--	
Input Capacitance	V_{DS}=50V, V_{GS}=0V, F=1MHz	C_{iss}	--	2800	--	pF
Output Capacitance		C_{oss}	--	96	--	
Reverse Transfer Capacitance		C_{rss}	--	6	--	
Intrinsic Gate Resistance	F=1MHz open drain	R_G	--	1.5	--	Ω
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Diode Forward Current	T_C=25°C	I_S	--	--	36	A
Pulsed Source-Drain Current		I_{SDM}	--	--	108	A
Diode Forward Voltage	V_{GS}=0V , I_S=36A, T_J=25°C	V_{SD}	--	--	1.2	V
Reverse Recovery Time	I_F=18A, di/dt=100A/μs, T_J=25°C	T_{rr}	--	160	--	nS
Reverse Recovery Charge		Q_{rr}	--	0.96	--	μC
Peak Reverse Recovery Current		I_{rrm}	--	12	--	A

Note:
1. Pulse Test: Repetitive Rating, pulse width limited by maximim junction temperature.
2. EAS condition: T_J=25°C, V_{DD}=50V, V_G=10V, R_G=25Ω.
3. Guaranteed by design, not subject to production.

Switching Time Waveform

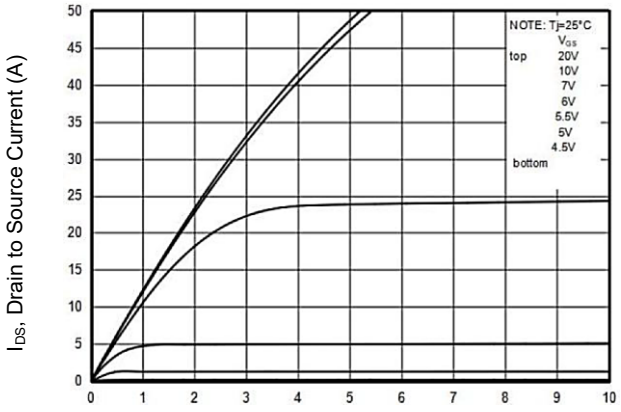


Switching Test Circuit

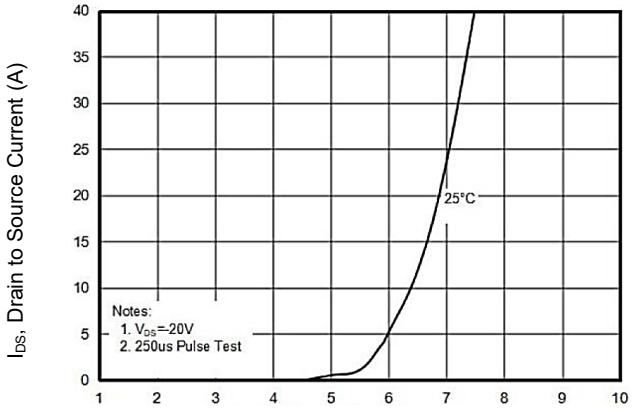


CHARACTERISTIC CURVES

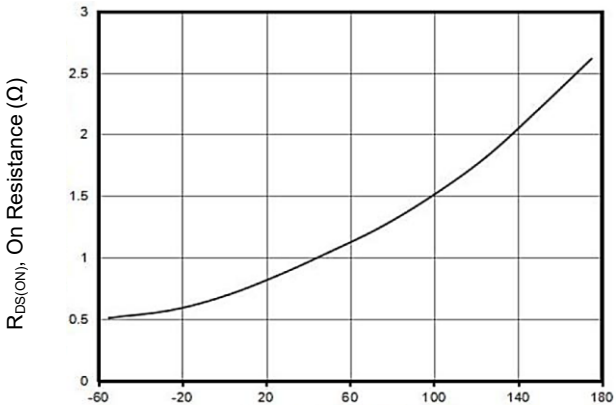
Output Characteristics



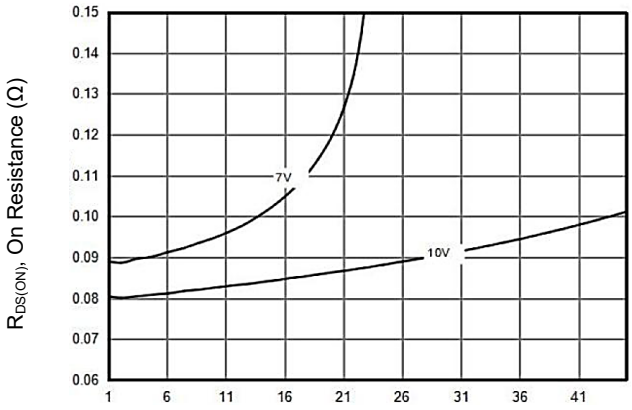
Transfer Characteristics



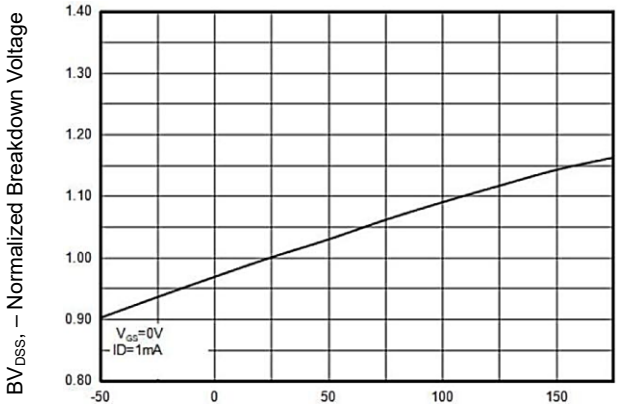
On-Resistance vs. Temperature



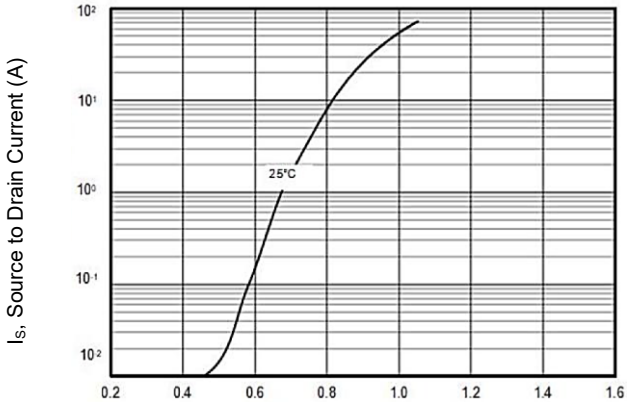
On-Resistance vs. Drain Current



Breakdown Voltage vs. Temperature

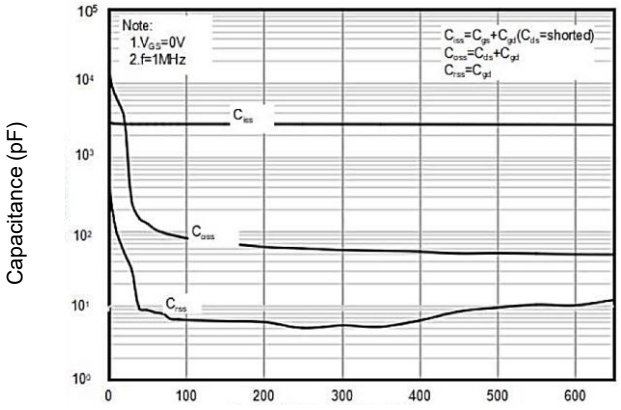


Body Diode Characteristics

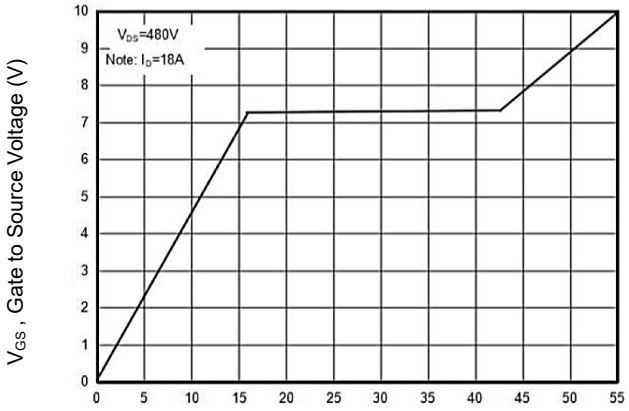


CHARACTERISTIC CURVES

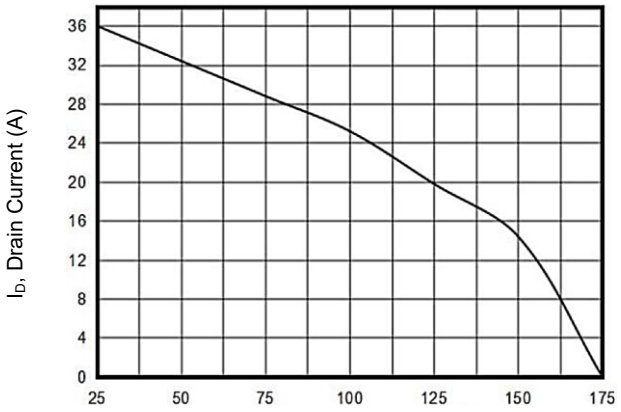
Capacitance



Gate Charge Characteristics



Maximum Drain Current vs. Junction Temperature



Maximum Safe Operating Area