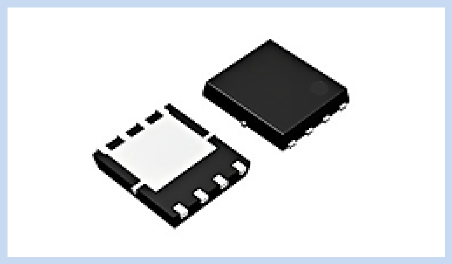
N-Channel MOSFET
100V 34A 33W DFN3x3-8L

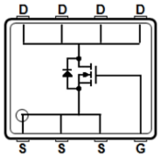
MFT10N34D33

MERITEK

FEATURE

- **$R_{DS(ON)}$<16mΩ at V_{GS}=10V**
- **$R_{DS(ON)}$<22mΩ at V_{GS}=4.5V**
- **High Density Cell Design for Ultra Low Rdson**
- **Application: DC/DC Converter, Consumer Electronic Power Supply, Synchronous Rectification, Motor control, Invertors**





RoHS

MECHANICAL DATA

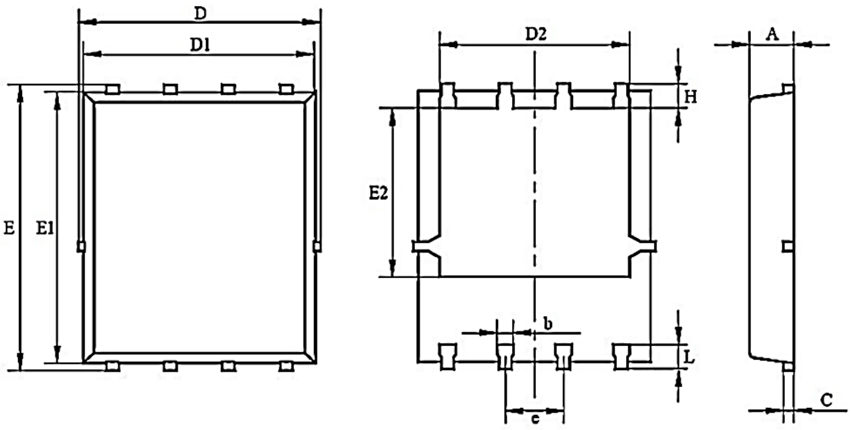
- **Case: DFN3x3-8L, Molded Plastic**
- **Terminal: Solderable per MIL-STD-750, Method 2026**

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		**V_{DS}**	100	V
Gate-Source Voltage		**V_{GS}**	±20	V
Drain Current – Continuous	**T_C=25°C**	**I_D**	34	A
	T_C=100°C		24	
Drain Current – Pulsed		**I_{DM}**	140	A
Power Dissipation		**P_D**	33	W
Single Pulse Avalanche Current		**I_{AS}**	14.7	A
Single Pulse Avalanche Energy		**E_{AS}**	54	mJ
Typical Thermal Resistance, Junction to Ambient		**$R_{\theta JA}$**	62.5	°C/W
Typical Thermal Resistance, Junction to Case		**$R_{\theta JC}$**	4.5	°C/W
Operating Junction and Storage Temperature Range		**T_J, T_{STG}**	-55~175	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A	0.70	0.90
b	0.24	0.35
c	0.21	0.25
D	3.10	3.30
D1	2.90	3.10
D2	2.40	2.60
e	0.60	0.70
E	3.10	3.30
E1	2.90	3.10
E2	1.65	1.85
H	0.33	0.53
L	0.30	0.50

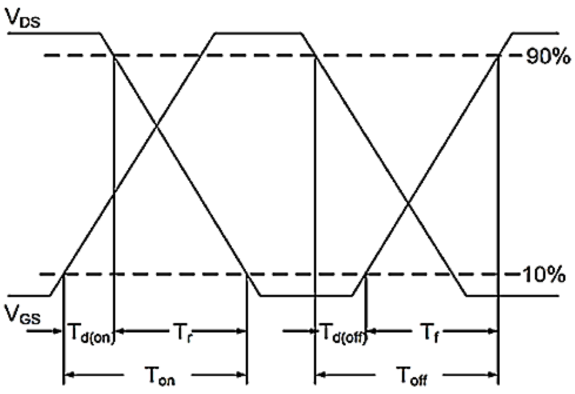


ELECTRICAL CHARACTERISTICS

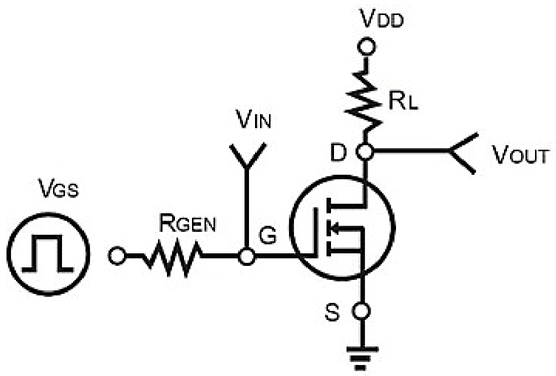
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250μA	BV_{DSS}	100	--	--	V
Zero Gate Voltage Drain Current	V_{DS}=100V , V_{GS}=0V	I_{DSS}	--	--	1	μA
Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	I_{GSS}	--	--	±100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS}=10V , I_D=15A	$R_{DS(ON)}$	--	12.0	16.0	mΩ
	V_{GS}=4.5V , I_D=10A		--	15.5	22.0	
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	$V_{GS(th)}$	1.2	-	2.5	V
Forward Transconductance	V_{DS}=5V, I_D=10A	g_{FS}	-	20	-	S
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=50V, I_D=15A, V_{GS}=4.5V	Q_g	--	10	--	nC
	V_{DS}=50V, I_D=15A, V_{GS}=10V		--	20	--	
Gate-Source Charge		Q_{gs}	--	4.2	--	
Gate-Drain Charge		Q_{gd}	--	3.8	--	
Turn-On Delay Time	V_{DS}=50V, I_D=15A V_{GS}=10V , R_G=4.7Ω	$T_{d(on)}$	--	12	--	ns
Rise Time		T_r	--	15	--	
Turn-Off Delay Time		$T_{d(off)}$	--	11	--	
Fall Time		T_f	--	3.5	--	
Input Capacitance	V_{DS}=50V, V_{GS}=0V, f=1MHz	C_{iss}	--	1123	--	pF
Output Capacitance		C_{oss}	--	424	--	
Reverse Transfer Capacitance		C_{rss}	--	15	--	
Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz	R_g	--	1	--	Ω
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Continuous Source Current	-	I_S	--	--	34	A
Pulse Source Current	-	I_{SM}	--	--	140	A
Diode Forward Voltage	V_{GS}=0V , I_S=1A	V_{SD}	--	--	1.2	V
Reverse Recovery Time	I_S=15A, dI/dt=100A/μs	T_{rr}	--	38	--	ns
Reverse Recovery Charge		Q_{rr}	--	41	--	nC

Note:
1. T_A =25℃ unless otherwise noted
2. The data tested by pulsed, pulse width ≤100μs, duty cycle ≤2%, Reptitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=175°C.
3. Limited by $T_{J(MAX)}$, starting T_J=25℃, L=0.5mH, Rg=25Ω, I_{AS}=14.7A, V_{GS}=10V
4. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch^2 copper plate in still air.

Switching Time Waveform

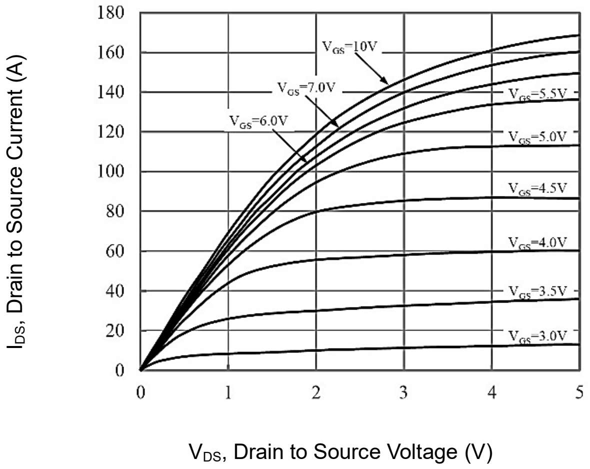


Switching Test Circuit

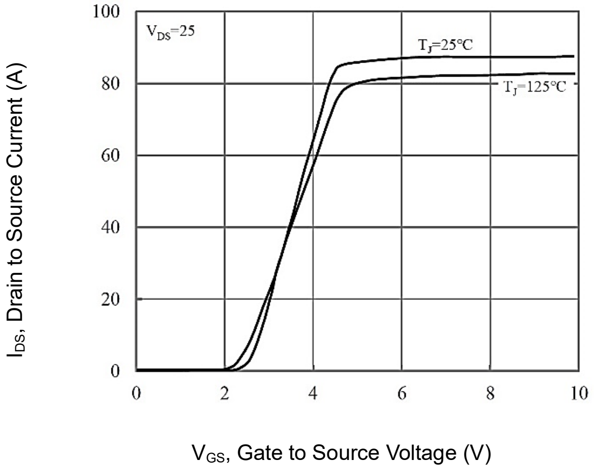


CHARACTERISTIC CURVES

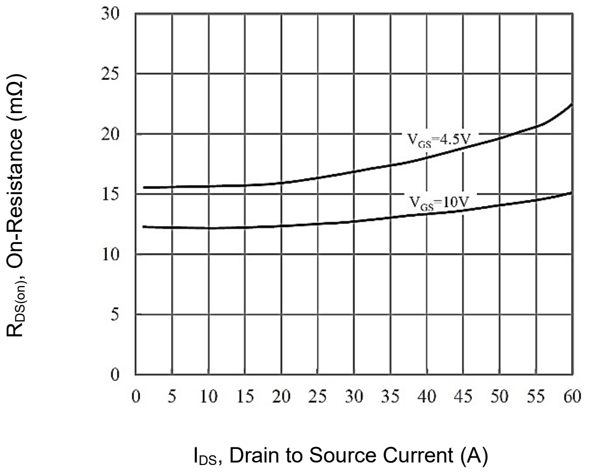
On-Region Characteristic



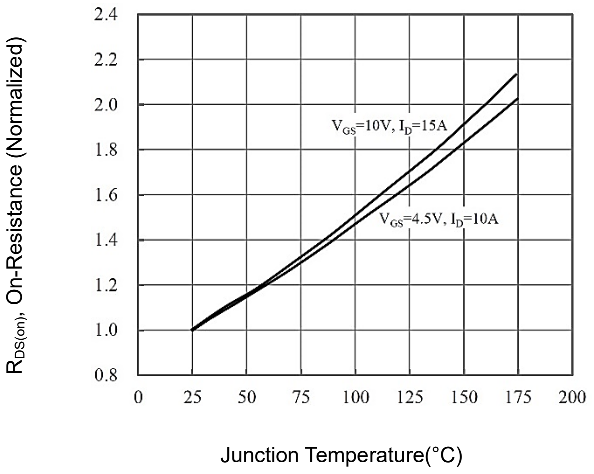
Transfer Characteristics



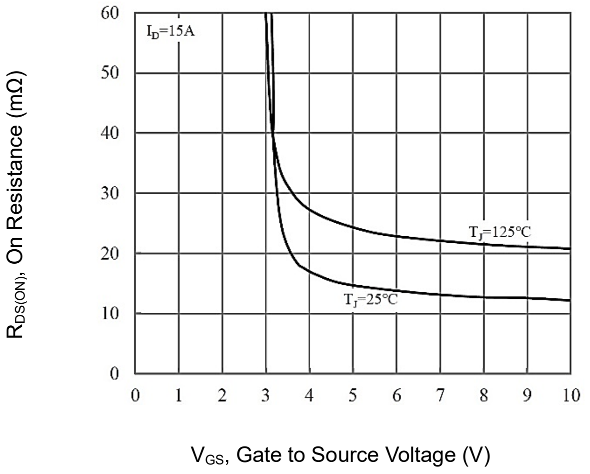
On-Resistance vs. Drain Current



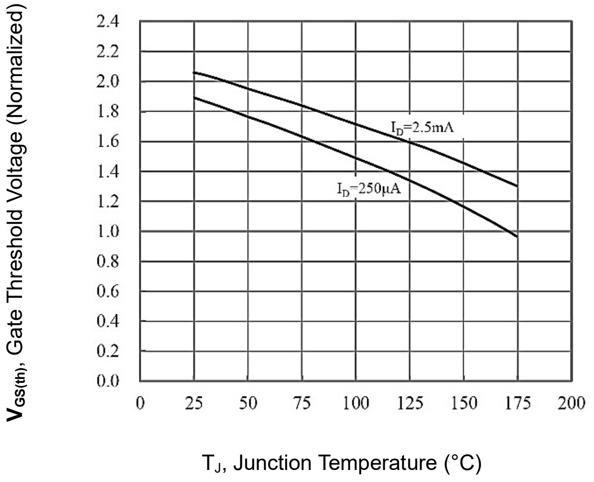
On-Resistance vs. Junction Temperature



On-Resistance Variation with V_{GS}

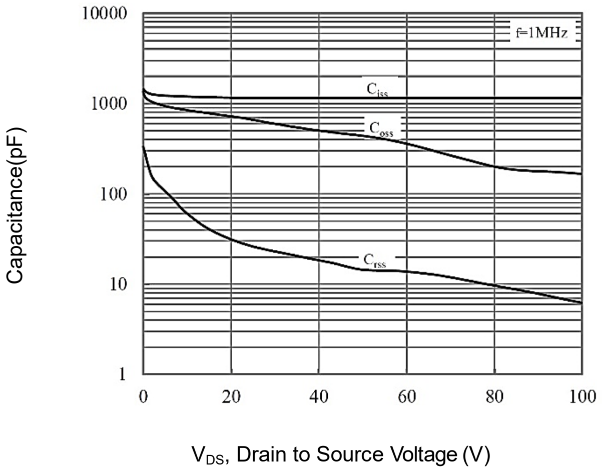


Gate Threshold Voltage vs. Temperature

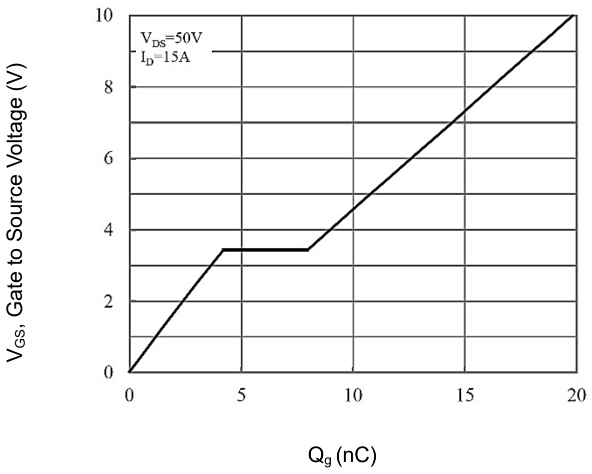


CHARACTERISTIC CURVES

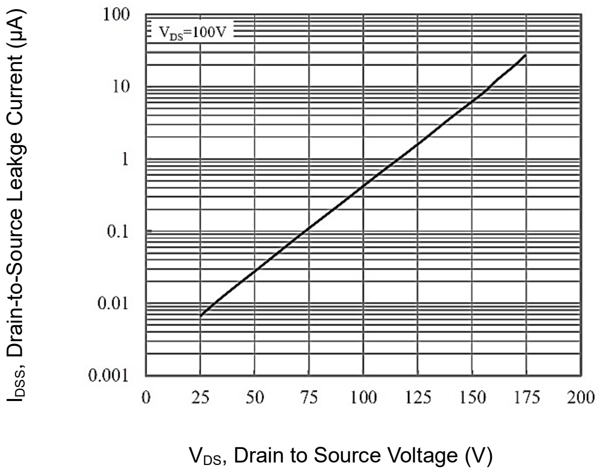
Capacitance vs. Drain-Source Voltage



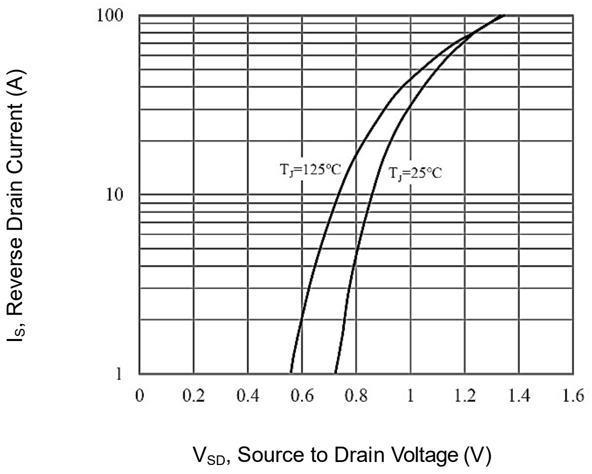
Gate-Charge Characteristics



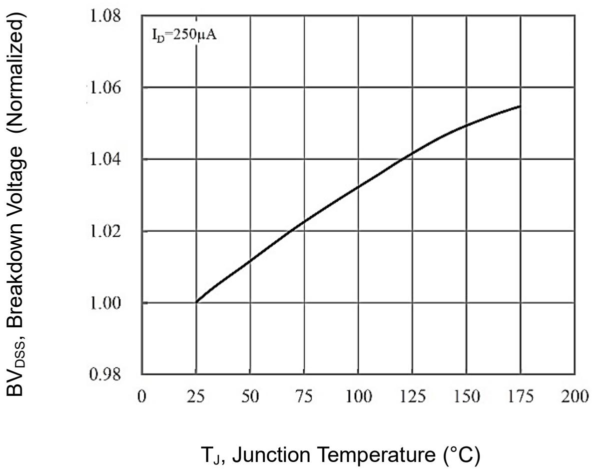
Drain-Source Leakge Current vs. Temperature



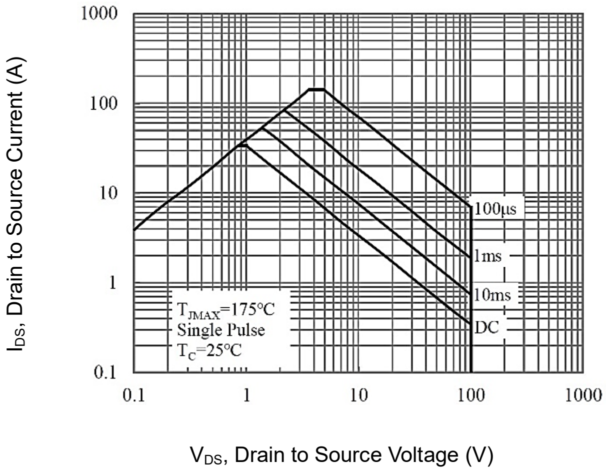
Reverse Diode Forward Voltage



Breakdown Voltage vs Temperature

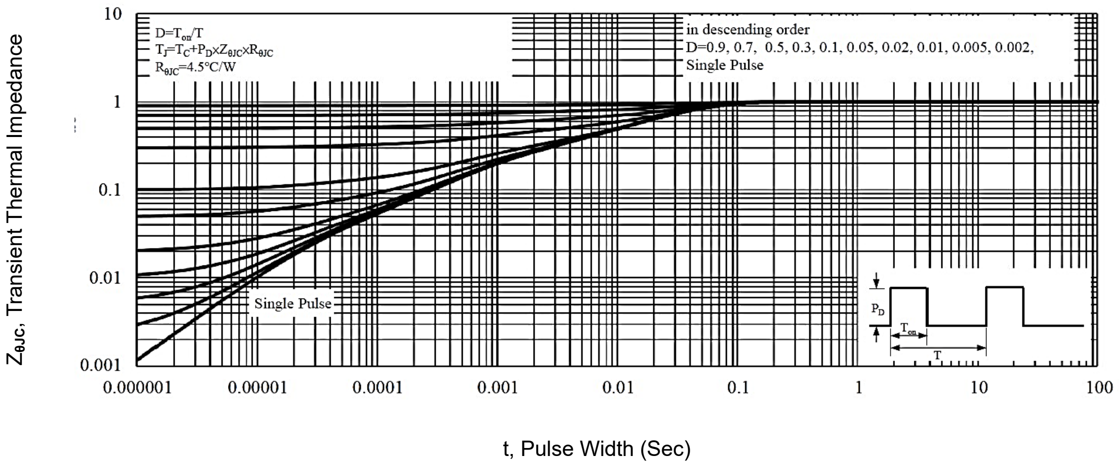


Maximum Safe Operating Area



CHARACTERISTIC CURVES

Normalized Transient Thermal Impedance from Junction to Case



Normalized Transient Thermal Impedance from Junction to Ambient