

N-Channel MOSFET

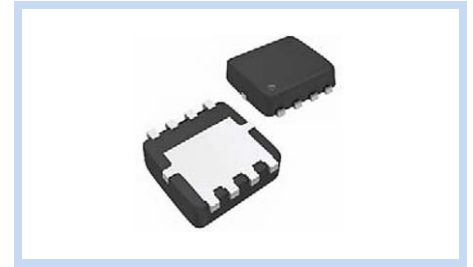
60V 50A 60W DFN3333-8L

MFT6N50D33

MERITEK

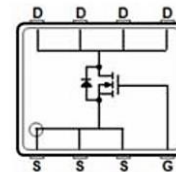
FEATURE

- $R_{DS(ON)} < 7.5m\Omega$, $V_{GS}=10V$, $I_D=25A$
- $R_{DS(ON)} < 8.8m\Omega$, $V_{GS}=4.5V$, $I_D=25A$
- High Density Cell Design for Ultra Low $R_{d(Son)}$
- High Speed Switching
- Application: DC/DC Converter, Ideal for High-Frequency Switching and Synchronous Rectification



MECHANICAL DATA

- Case: DFN3.3x3.3-8L package
- Terminals: Solderable per MIL-STD-750, Method 2026

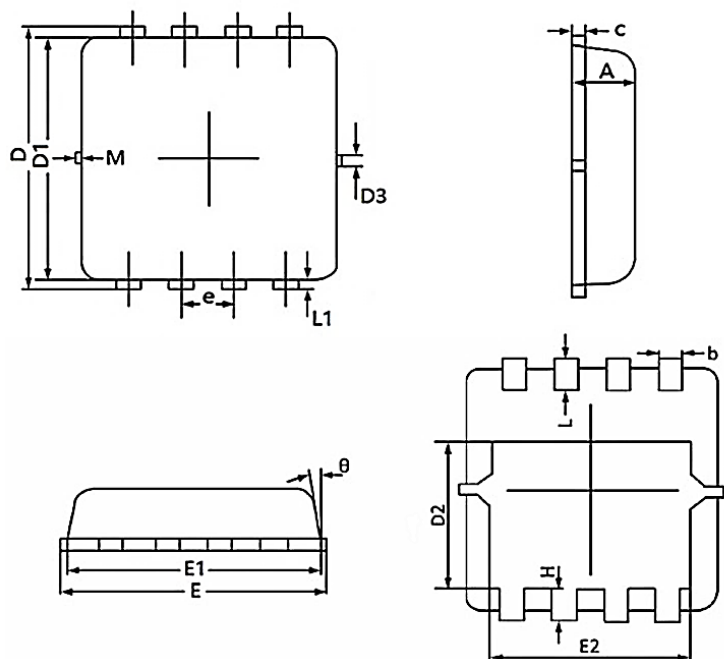


MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current – Continuous	$T_C=25^{\circ}C$	I_D	50	A
	$T_C=100^{\circ}C$		39	
Drain Current – Pulsed		I_{DM}	200	A
Power Dissipation		P_D	60	W
Single Pulsed Avalanche Energy		E_{AS}	350	mJ
Thermal Resistance Junction to Case		$R_{\theta JC}$	2.1	$^{\circ}C/W$
Junction Temperature		T_J	150	$^{\circ}C$
Storage Temperature Range		T_{STG}	-55 to +150	$^{\circ}C$

DIMENSIONS

Item	Min. (mm)	Max. (mm)
A	0.700	0.800
b	0.250	0.350
c	0.100	0.250
D	3.250	3.450
D1	3.000	3.200
D2	1.780	1.980
D3	0.130 BSC	
E	3.100	3.300
E1	3.000	3.200
E2	2.390	2.590
e	0.650 BSC	
H	0.300	0.500
L	0.300	0.500
L1	0.130 BSC	
M	0.000	0.150
θ	0°	12°



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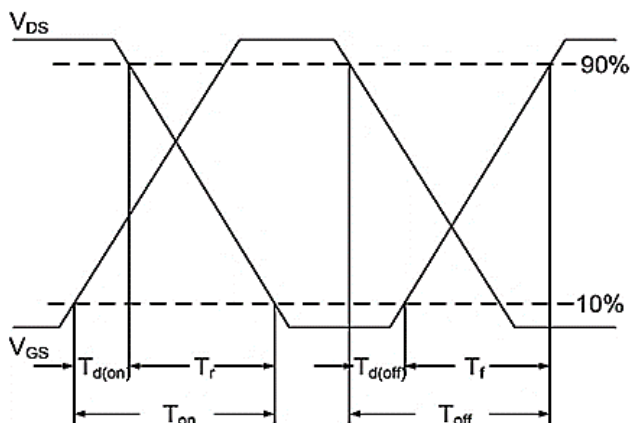
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	60	--	--	V
Drain-Source Leakage Current	$V_{DS}=60V, V_{GS}=0V$	I_{DSS}	--	--	1	μA
Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	--	--	± 100	nA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=25A$	$R_{DS(ON)}$	--	6.5	7.5	m Ω
	$V_{GS}=4.5V, I_D=25A$		--	7.7	8.8	
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.8	2.4	V
Forward Transconductance	$V_{DS}=5V, I_D=25A$	g_{FS}	--	60	--	S
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=30V, V_{GS}=10V, I_D=25A$	Q_g	--	34.8	--	nC
Gate-Source Charge		Q_{gs}	--	7	--	
Gate-Drain Charge		Q_{gd}	--	5.3	--	
Turn-On Delay Time	$V_{DD}=30V, V_{GS}=10V, R_G=1.6\Omega, I_D=25A$	$T_{d(on)}$	--	8	--	ns
Rise Time		T_r	--	2	--	
Turn-Off Delay Time		$T_{d(off)}$	--	29	--	
Fall Time		T_f	--	4	--	
Input Capacitance	$V_{DS}=30V, V_{GS}=0V, f=1MHz$	C_{iss}	--	2000	--	pF
Output Capacitance		C_{oss}	--	315	--	
Reverse Transfer Capacitance		C_{rss}	--	9.9	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	--	I_S	--	--	50	A
Diode Forward Voltage	$V_{GS}=0V, I_S=25A$	V_{SD}	--	--	1.2	V
Reverse Recovery Time	$I_F=25A, T_J=25^\circ C$	T_{rr}	--	38	--	ns
Reverse Recovery Charge	$di/dt=100A/\mu s$	Q_{rr}	--	48	--	nC

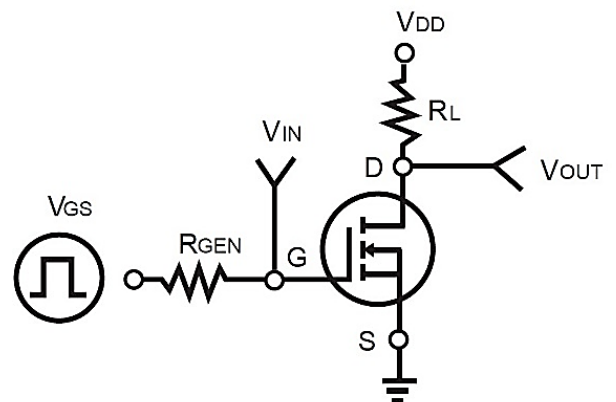
Note:

1. Pulse Test: Pulse Width < 300 μs , Duty Cycle $\leq 2\%$.

Switching Time Waveform

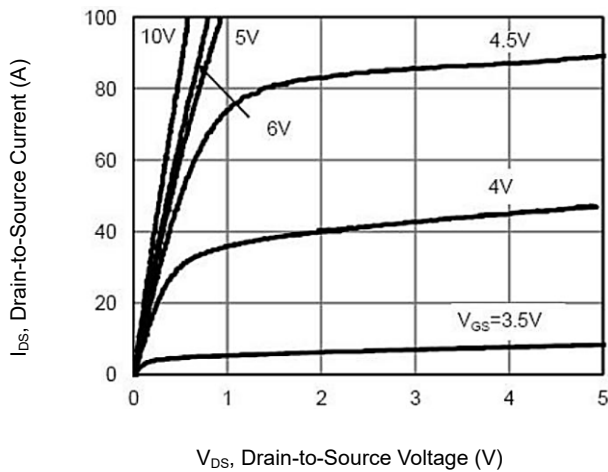


Switching Test Circuit

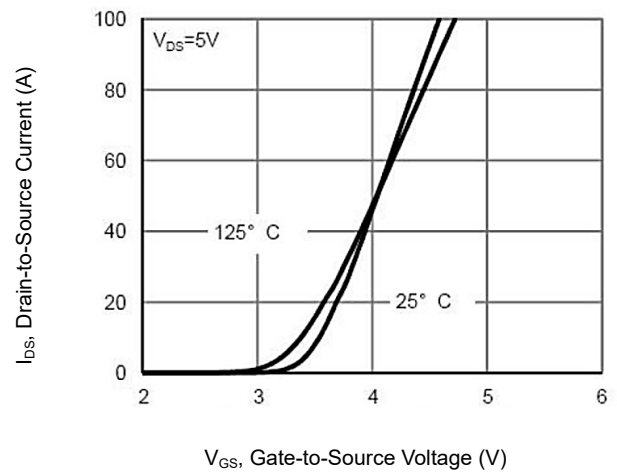


CHARACTERISTIC CURVES

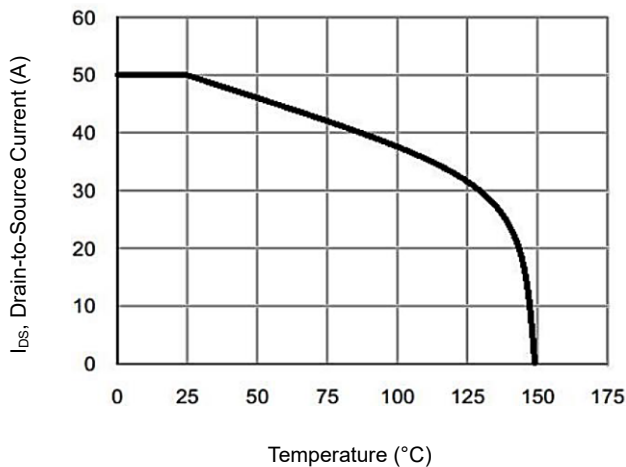
Output Characteristics



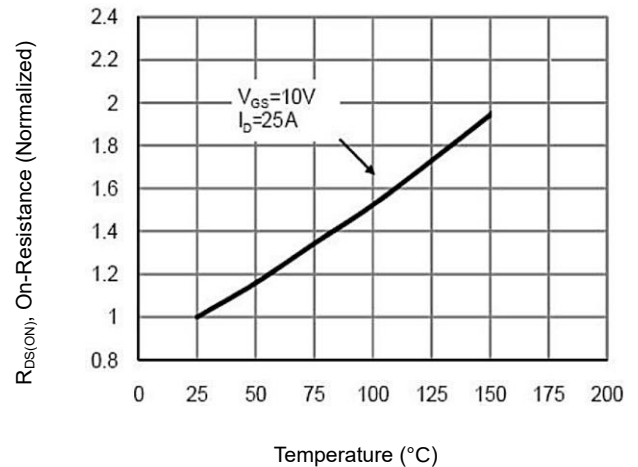
Transfer Characteristics



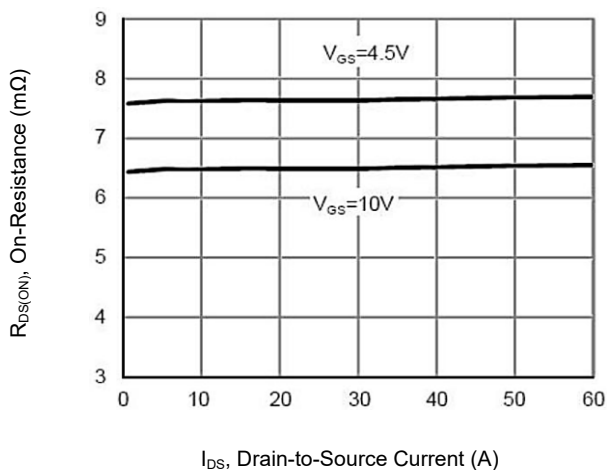
Drain Current Dissipation



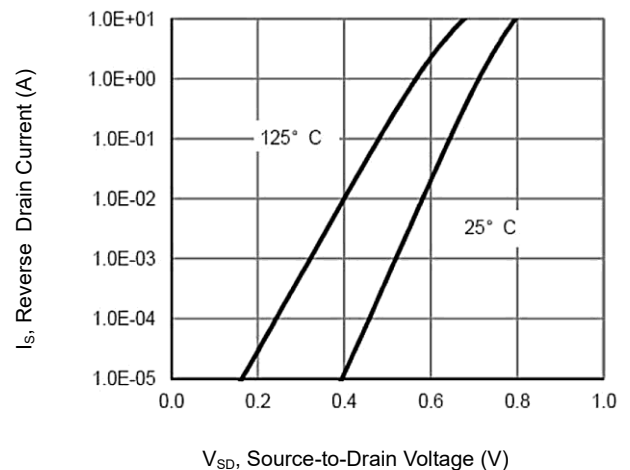
On-Resistance Vs. Junction Temperature



On-Resistance vs Drain Current



Source- Drain Diode Forward



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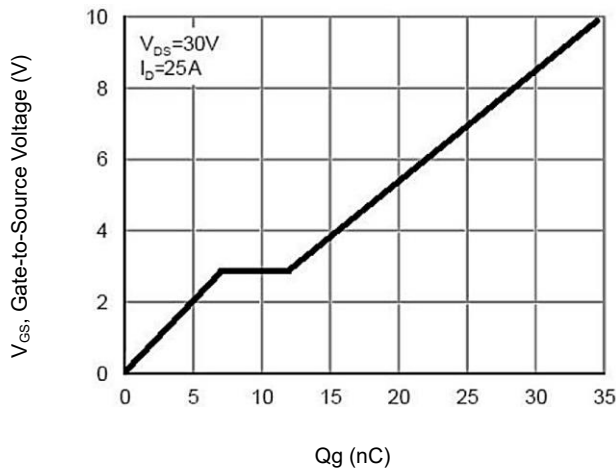
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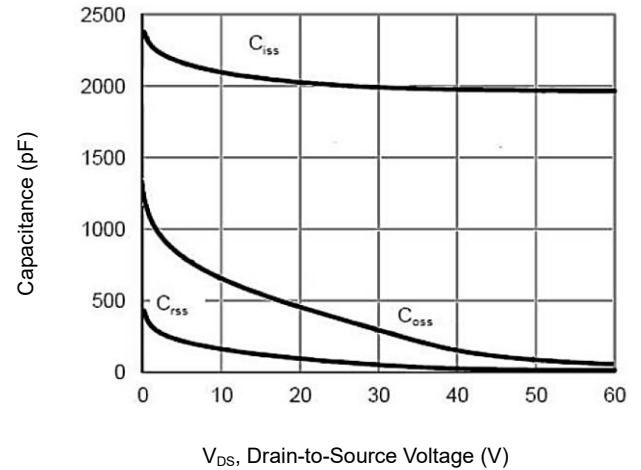
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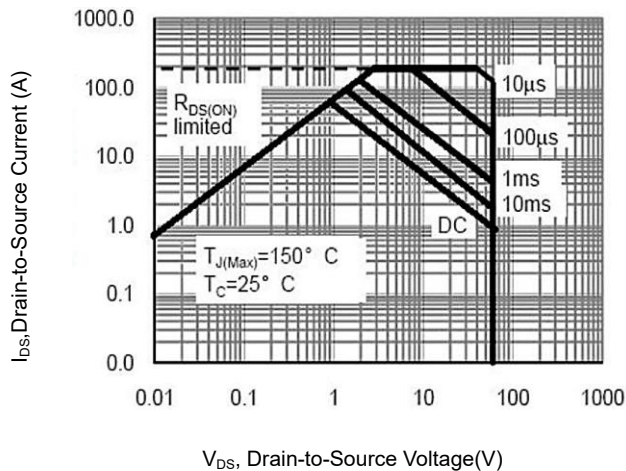
Gate-Charge Characteristics



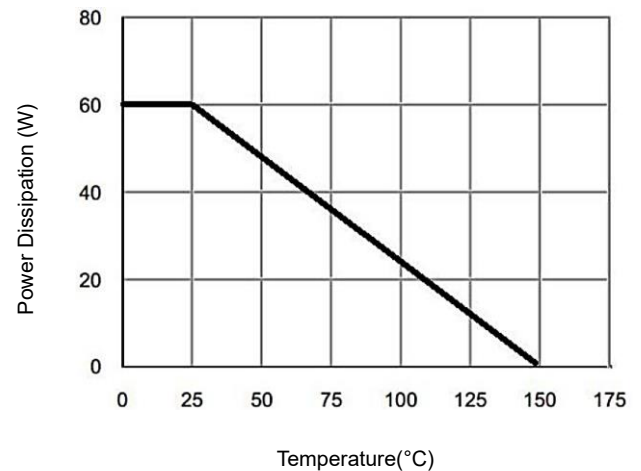
Capacitance



Maximum Safe Operating Area



Power Dissipation



Normalized Transient Thermal Impedance

