

N-Channel MOSFET

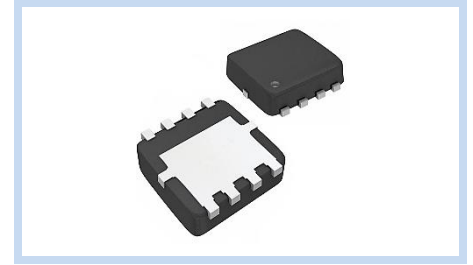
40V 65A DFN3333-8L AEC-Q101

MFT4N65D33A

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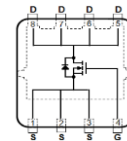
FEATURE

- $R_{DS(ON)} < 2.8m\Omega$, $V_{GS}=10V$, $I_D=20A$
- $R_{DS(ON)} < 4.2m\Omega$, $V_{GS}=4.5V$, $I_D=20A$
- High Density Cell Design for Ultra Low $R_{DS(ON)}$
- Application: DC/DC Converter, High-Frequency Switching and Synchronous Rectification
- AEC-Q101 Compliant



MECHANICAL DATA

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

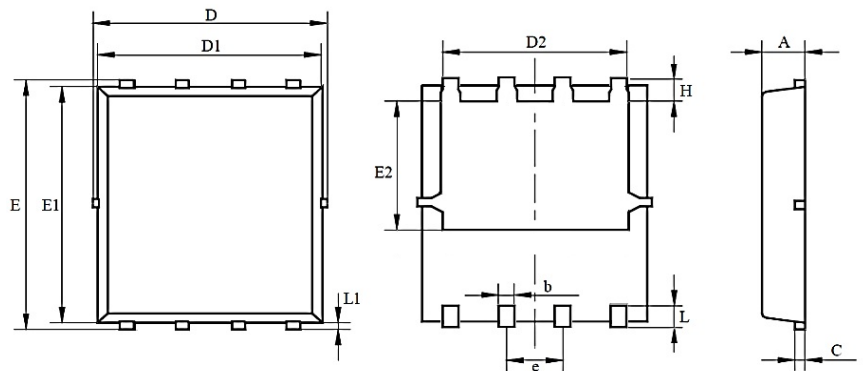


MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current – Continuous	$T_C = 25^\circ C$	I_D	65	A
	$T_C = 100^\circ C$		45.5	
Drain Current – Pulsed		I_{DM}	260	A
Power Dissipation		P_D	55	W
Single Pulsed Avalanche Energy		E_{AS}	500	mJ
Thermal Resistance Junction to Case		$R_{\theta JC}$	2.3	$^\circ C/W$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ C$

DIMENSIONS

Item	Min. (mm)	Max. (mm)
A	0.65	0.85
b	0.20	0.40
c	0.10	0.25
D	3.20	3.40
D1	3.00	3.20
D2	2.39	2.59
E	3.25	3.45
E1	3.00	3.20
E2	1.48	1.68
e	0.650 (BSC)	
L	0.30	0.50
H	0.30	0.50



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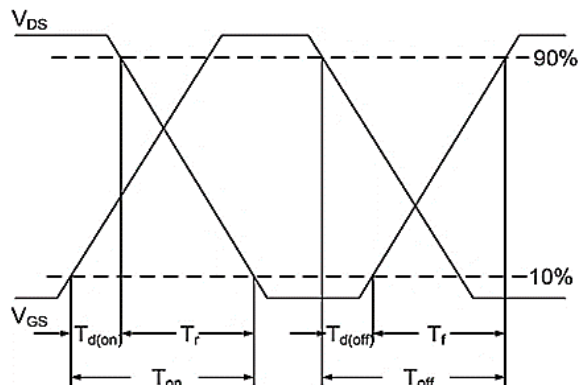
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	40	--	--	V
Drain-Source Leakage Current	$V_{DS}=40V, V_{GS}=0V$	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	$V_{GS}=10V, I_D=20A$	$R_{DS(ON)}$	--	2.2	2.8	m Ω
	$V_{GS}=4.5V, I_D=20A$		--	3.3	4.2	
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	1.0	1.5	2.0	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=20V, V_{GS}=10V, I_D=20A$	Q_g	--	35	--	nC
Gate-Source Charge		Q_{gs}	--	6.2	--	
Gate-Drain Charge		Q_{gd}	--	5.1	--	
Turn-On Delay Time	$V_{DD}=20V, V_{GS}=10V, R_G=1.6\Omega, I_D=20A$	$T_{d(on)}$	--	7.5	--	nS
Rise Time		T_r	--	4.0	--	
Turn-Off Delay Time		$T_{d(off)}$	--	37	--	
Fall Time		T_f	--	7.5	--	
Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1MHz$	C_{iss}	--	2100	--	pF
Output Capacitance		C_{oss}	--	773	--	
Reverse Transfer Capacitance		C_{rss}	--	15.5	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	--	I_S	--	--	65	A
Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	V_{SD}	--	--	1.2	V
Reverse Recovery Time	$I_F=I_S, di/dt=100A/\mu s, T_J=25^\circ C$	T_{rr}	--	14	--	nS
Reverse Recovery Charge		Q_{rr}	--	21	--	nC

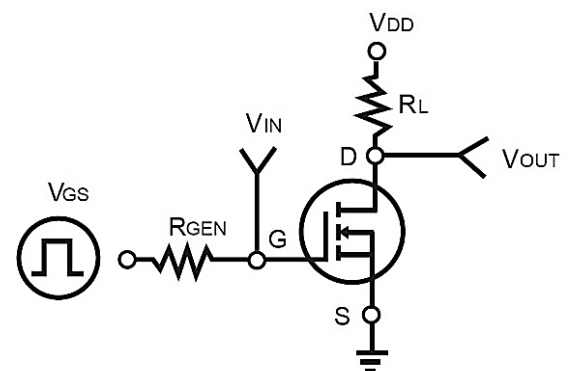
Note:

1. Surface mounted on FR4 board, $t \leq 10sec$.
2. Guaranteed by design, not subject to production testing.
3. EAS condition: $T_J=25^\circ C, V_{DD}=20V, V_G=10V, L=0.5mH, R_G=25\Omega$

Switching Time Waveform



Switching Test Circuit



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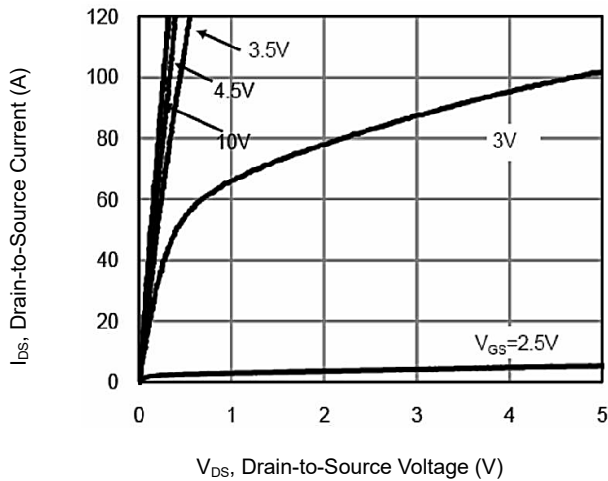
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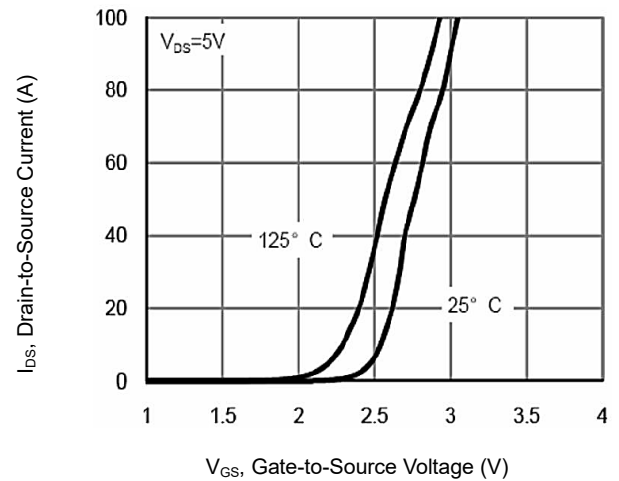
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CHARACTERISTIC CURVES

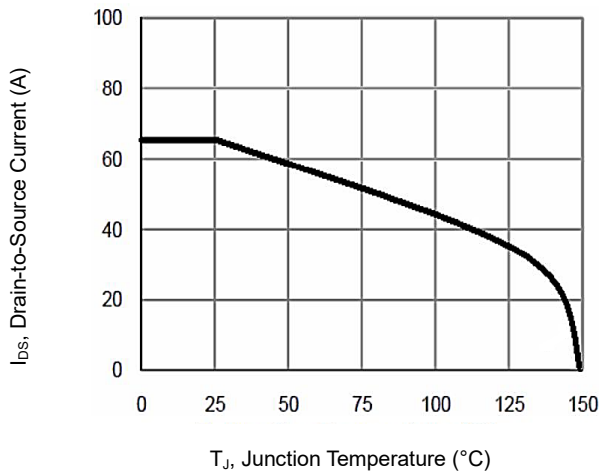
Output Characteristics



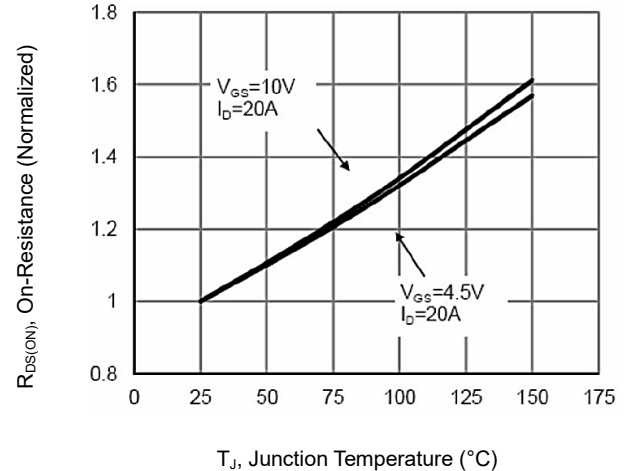
Transfer Characteristics



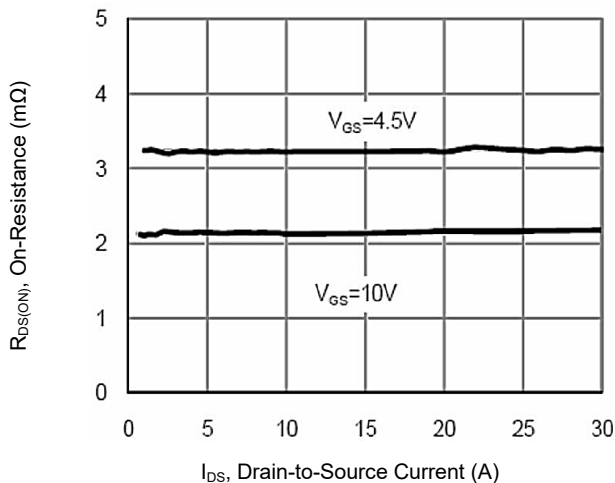
Drain Current Derating



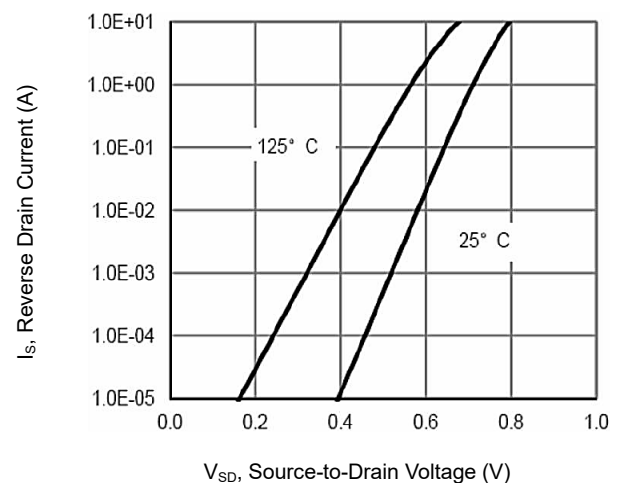
On-Resistance vs Junction Temperature



On-Resistance vs Drain Current



Body Diode Characteristics



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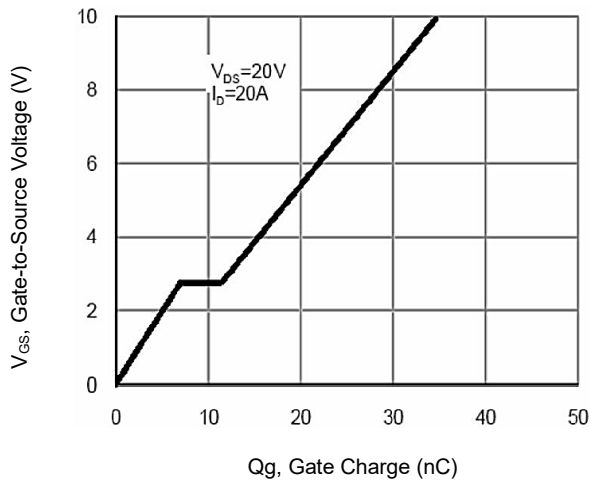
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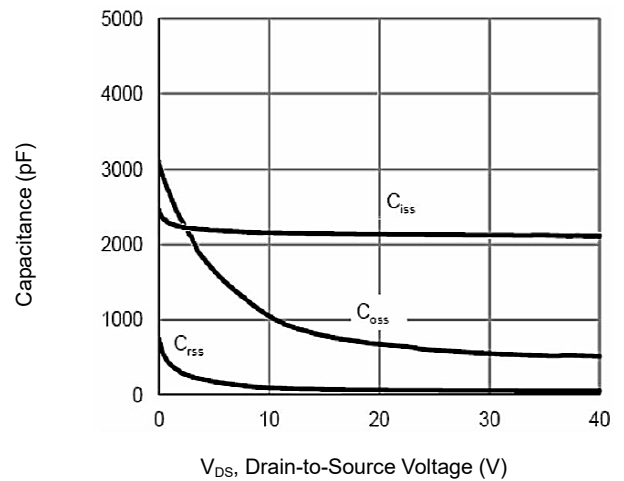
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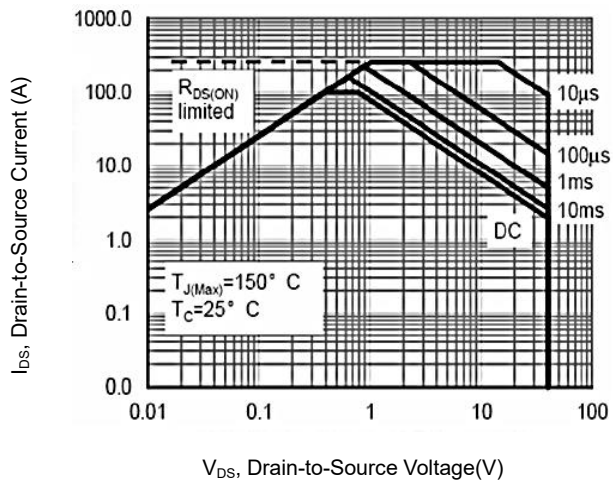
Gate Charge Characteristics



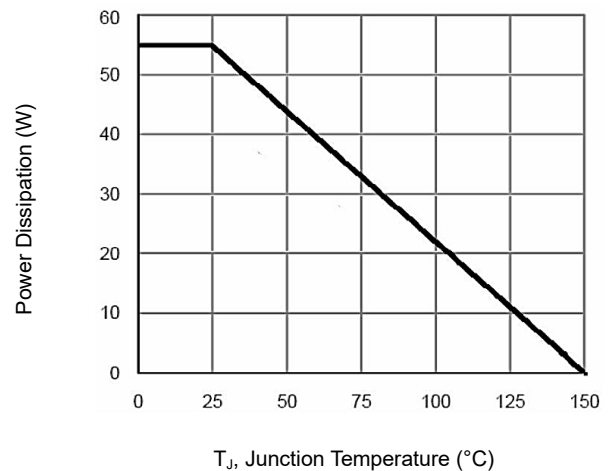
Capacitance



Maximum Safe Operating Area



Power Dissipation



Normalized Transient Thermal Impedance

