

Dual N-Channel MOSFET

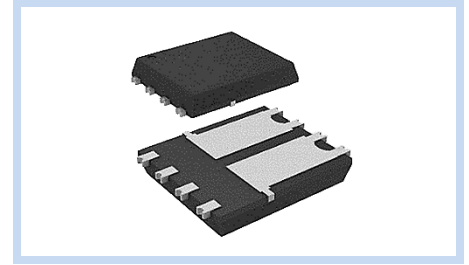
60V 45A DFN5×6-8L AEC-Q101

MFT62N45D56A

MERITEK

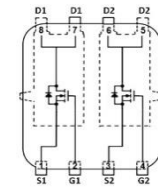
FEATURE

- $R_{DS(ON)} < 11m\Omega$ at $V_{GS}=10V$
- High density Cell Design for Ultra Low $R_{DS(on)}$
- Fully Characterized Avalanche Voltage and Current
- Low Gate to Drain Charge to Reduce Switching Losses
- Application: Power Switching Application, Load Switch
- AEC-Q101 Qualified



MECHANICAL DATA

- Case: DFN5×6-8L Package
- Terminals: Solderable per MIL-STD-750, Method 2026

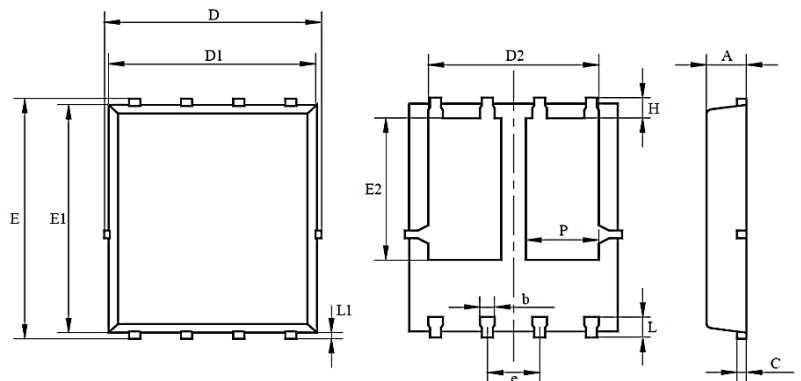


MAXIMUM RATINGS

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	45	A
	$T_C = 100^\circ C$		32	
Drain Current – Pulsed		I_{DM}	180	A
Power Dissipation		P_D	60	W
Single Pulse Avalanche Energy		E_{AS}	260	mJ
Thermal Resistance Junction to Case		$R_{\theta JC}$	2.08	$^\circ C/W$
Operating Junction Temperature		T_J	150	$^\circ C$
Storage Temperature Range		T_{STG}	-55 to +150	$^\circ C$

DIMENSIONS

Item	Min (mm)	Max (mm)
A	0.90	1.10
b	0.33	0.51
C	0.20	0.30
D	4.80	5.00
D2	3.61	3.96
E	5.90	6.10
E1	5.70	5.80
E2	3.38	3.78
e	1.27 BSC	
L	0.51	0.71
L1	0.06	0.20
H	0.41	0.61
P	0.50	-



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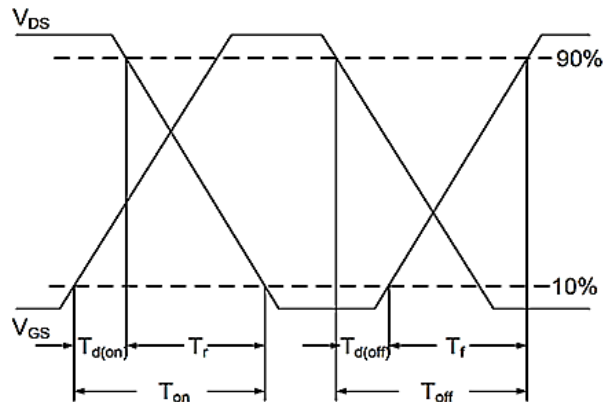
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	BV_{DSS}	60	--	--	V
Drain-Source Leakage Current	$V_{DS}=60V$, $V_{GS}=0V$,	I_{DSS}	--	--	1	μA
Gate-Source 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	$V_{GS}=10V$, $I_D=20A$	$R_{DS(ON)}$	--	9.4	11	m Ω
Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	$V_{GS(th)}$	2	3	4	V
Forward transconductance	$V_{DS}=5V$, $I_D=20A$	g_{FS}	20	--	--	S
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=20A$	Q_g	--	60	--	nC
Gate-Source Charge		Q_{GS}	--	14.6	--	
Gate-Drain Charge		Q_{gd}	--	17	--	
Turn-On Delay Time	$V_{DS}=30V$, $V_{GS}=10V$, $R_G=3\Omega$, $R_L=1\Omega$	$T_{d(on)}$	--	9	--	nS
Rise Time		T_r	--	7	--	
Turn-Off Delay Time		$T_{d(off)}$	--	32	--	
Fall Time		T_f	--	6	--	
Input Capacitance	$V_{DS}=30V$, $V_{GS}=0V$, $F=1MHz$	C_{iss}	--	2970	--	pF
Output Capacitance		C_{oss}	--	181	--	
Reverse Transfer Capacitance		C_{rss}	--	161	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Current	--	I_S	--	--	45	A
Diode Forward Voltage	$V_{GS}=0V$, $I_S=20A$	V_{SD}	--	--	1.2	V
Reverse Recovery Time	$I_S=20A$, $dI_S/dt=100A/\mu s$, $T_J=25^\circ C$	T_{rr}	--	31	--	nS
Reverse Recovery Charge		Q_{rr}	--	45	--	nC

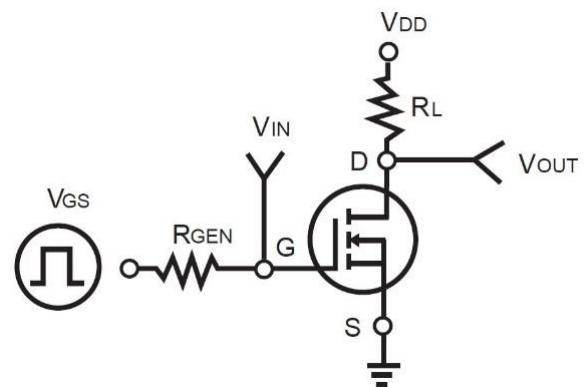
Note:

1. Pulse width $\leq 100\mu s$, duty cycle $\leq 2\%$
2. Mounted on FR4 Bboard, $t \leq 10$ sec.
3. The test condition is $L=0.5mH$, $V_{DD}=20V$, $V_{GS}=10V$, Starting $T_J=25^\circ C$.

Switching Time Waveform

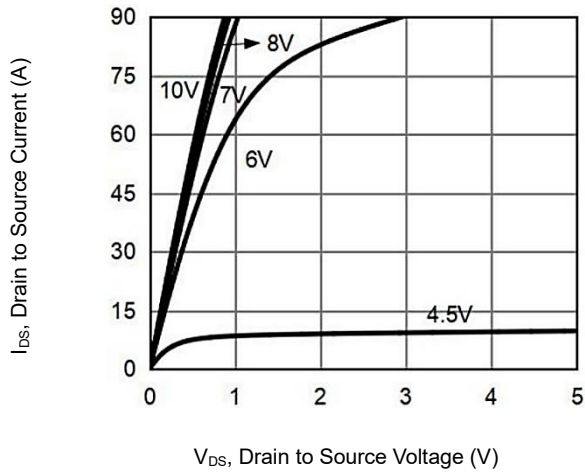


Switching Test Circuit

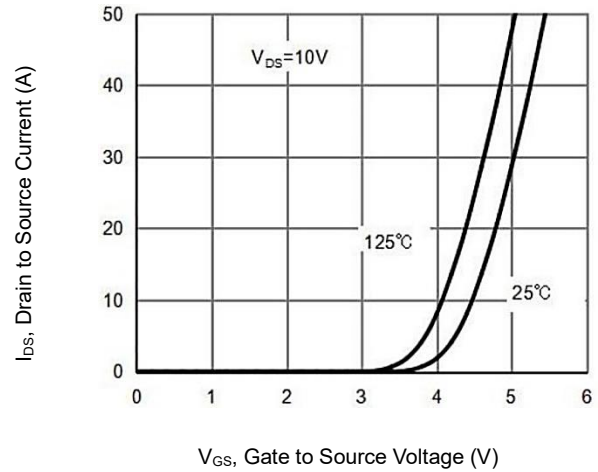


CHARACTERISTIC CURVES

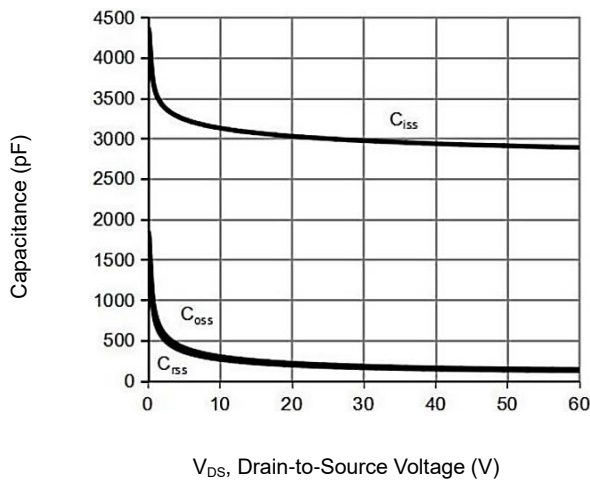
On-Region Characteristics



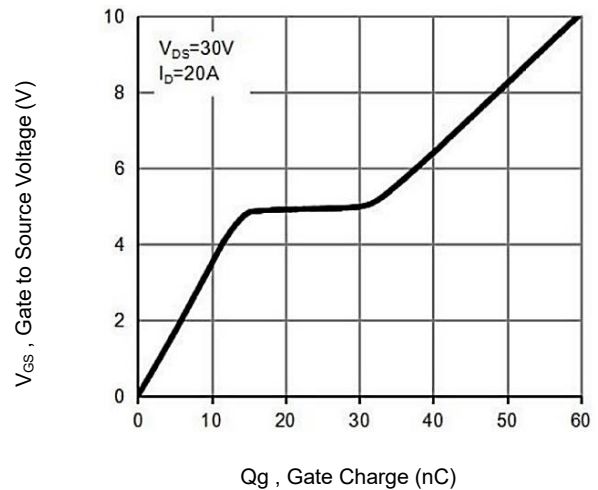
Transfer Characteristics



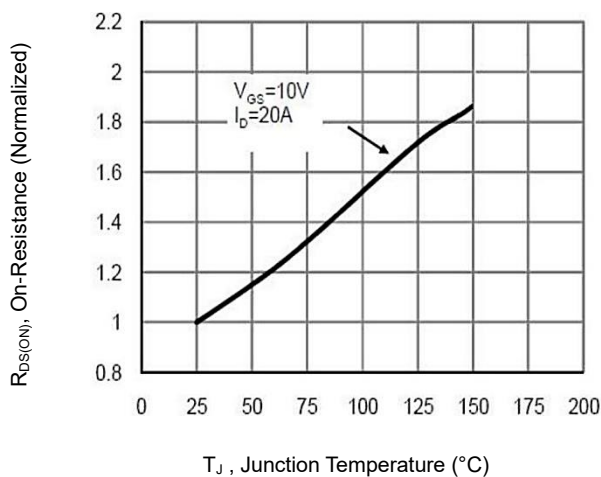
Capacitance vs. Drain-Source Voltage



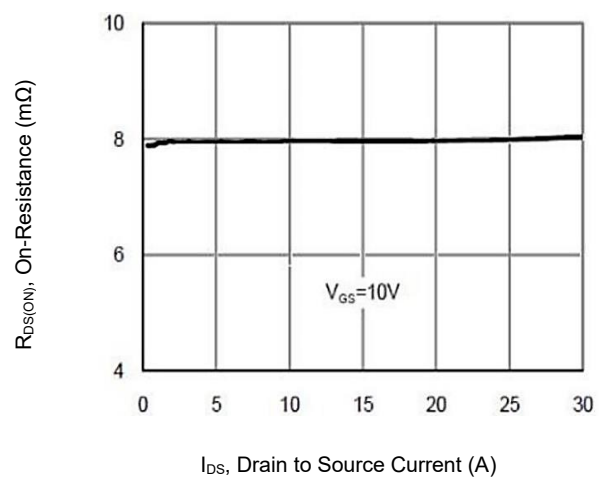
Gate Charge



On-Resistance vs. T_J

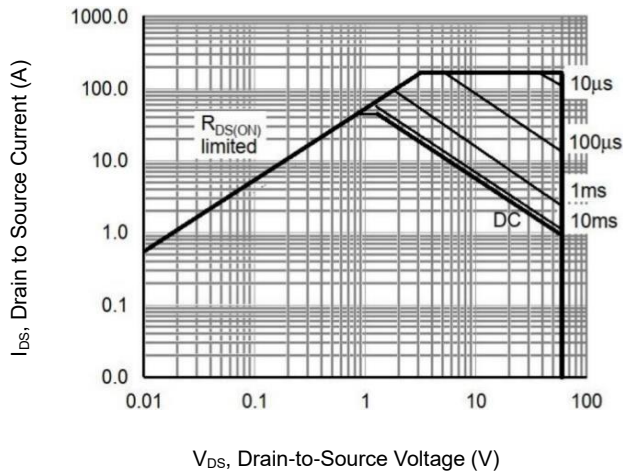


On-Resistance vs. Drain Current

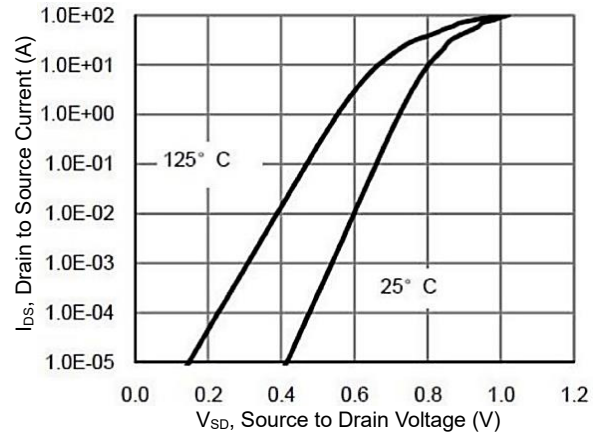


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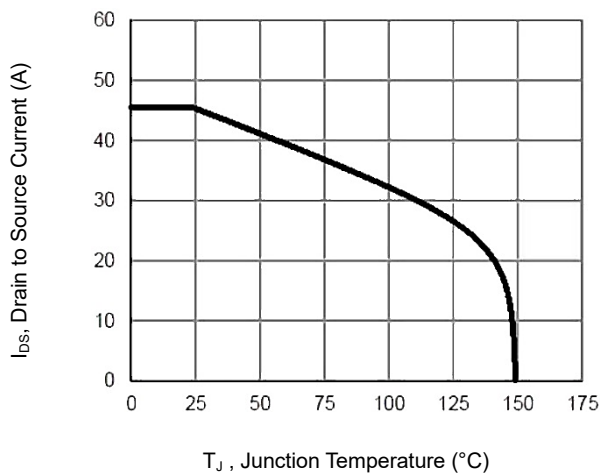
Maximum Safe Operating Area



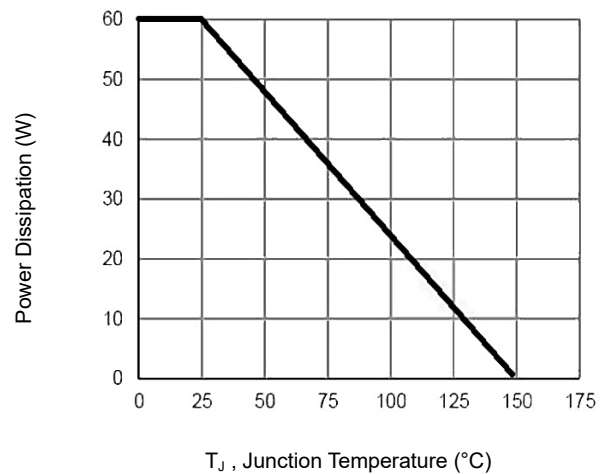
Body Diode Forward Voltage



Drain Current



Power Derating Curve



Normalized Transient Thermal Impedance vs Pulse Width

