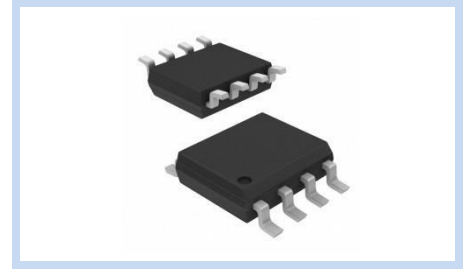# Dual N-Channel MOSFET
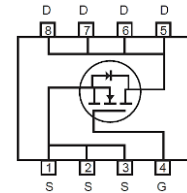# 60V 4.8A 2.5W SOP-8

MFT62N4A8S8

MERITEK

FEATURE

- $R_{DS(ON)}$, V_{GS} at 10V, I_D at 4.8A<50mΩ
- $R_{DS(ON)}$, V_{GS} at 4.5V, I_D at 2.4A<60mΩ
- High Switching Speed
- Improved dv/dt Capacitance

MECHANICAL DATA

- Case: SOP-8 package
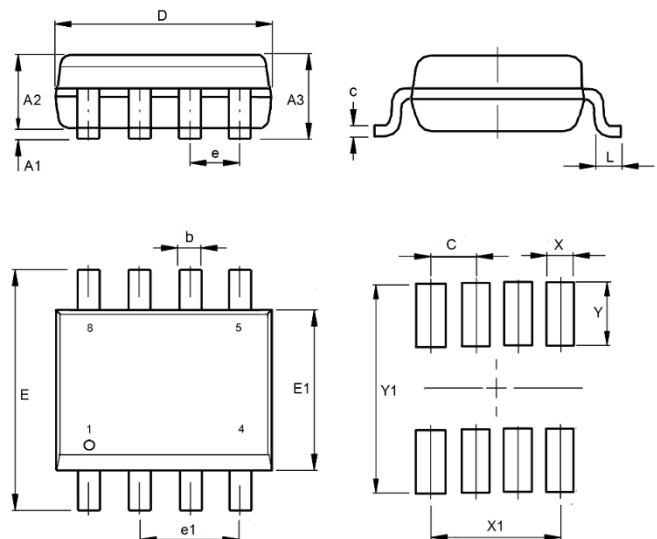- Terminals: Solderable per MIL-STD-750, Method 2026

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°C	I_D	4.8	A
	T_A=70°C		3.8	A
Drain Current – Pulsed		I_{DM}	19.2	A
Single Pulse Avalanche Energy		E_{AS}	11	mJ
Power Dissipation	T_C=25°C	P_D	2.5	W
	T_A=70°C		1.6	W
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	50	°C/W
Operating Junction And Storage Temperature		$T_J. T_{STG}$	-55 to 150	°C

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.10	0.25
A2	1.35	1.75
A3	1.45	2.00
b	0.31	0.51
c	0.17	0.25
D	4.69	5.00
e	1.27 BSC	
e1	2.54	2.54
E	5.80	6.20
E1	3.70	4.06
L	0.40	0.95
Y	1.00	1.00
Y1	6.75	6.75
X	0.50	0.50
X1	3.81	3.81
C	1.27	1.27

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	$V_{GS}=\pm20V$, $V_{DS}=0V$	**I$_{GSS}$**	--	--	±100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	$V_{GS}=4.5V$, $I_D=2.4A$	**R$_{DS(ON)}$**	--	42	60	mΩ
	$V_{GS}=10V$, $I_D=4.8A$		--	37	50	mΩ
Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	**V$_{GS(th)}$**	1.0	1.77	2.5	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge		**Q$_g$**	--	14	--	nC
Gate-Source Charge	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=4A$	**Q$_{gs}$**	--	2.9	--	
Gate-Drain Charge		**Q$_{gd}$**	--	2.3	--	
Turn-On Delay Time		**T$_{d(on)}$**	--	3.9	--	ns
Rise Time	$V_{DD}=30V$, $V_{GS}=10V$, $R_G=3.3\Omega$ $I_D=1A$	**T$_r$**	--	13	--	
Turn-Off Delay Time		**T$_{d(off)}$**	--	23	--	
Fall Time		**T$_f$**	--	6.7	--	
Input Capacitance		**C$_{iss}$**	--	815	--	pF
Output Capacitance	$V_{DS}=15V$, $V_{GS}=0V$, $F=1MHz$	**C$_{oss}$**	--	379	--	
Reverse Transfer Capacitance		**C$_{rss}$**	--	110	--	
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Continuous Source Current	$V_G=V_D=0V$, Force Current	**I$_s$**	--	--	4.8	A
Diode Forward Voltage	$V_{GS}=0V$, $I_S=1A$	**V$_{SD}$**	--	0.73	1.0	V

Note:
1. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤2%.
2. Essentially independent of operating temperature typical characteristics.
3. The maximum current rating is package limited.
4. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150°C$.
   Rating are based on low frequency and duty cycles to keep initial TJ =25°C
5. The test condition is L=0.1mH, $I_{AS}=15A$, $V_{DD}=25V$, $V_{GS}=10V$
6. $R_{\theta JA}$ is the sum of the junction to case and case to ambient thermal resistance where the case thermal reference is
   Defined as the solder mounting surface of the drain pins. Mounted on a 1 inch^2 with 2 oz square pad of copper.
7. Guaranteed by design, not subject to production testing.

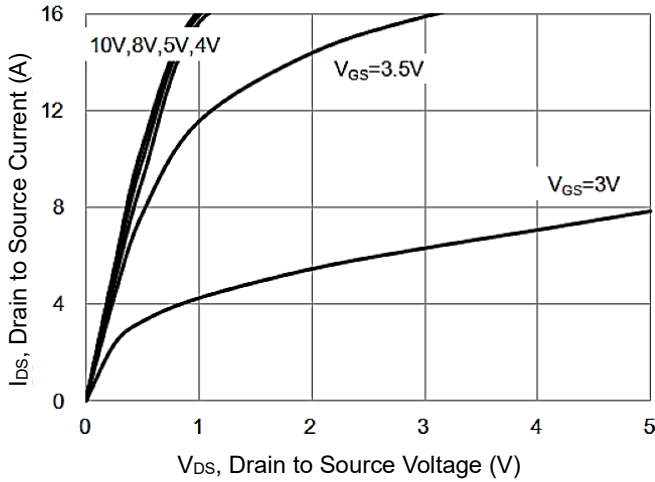**Switching Time Waveform**
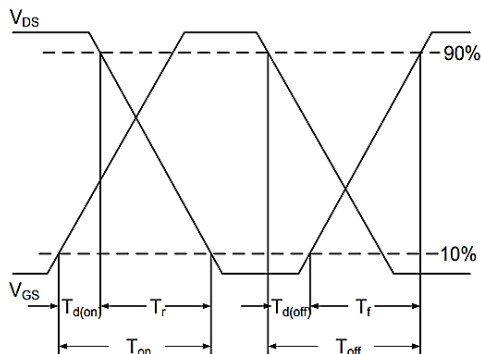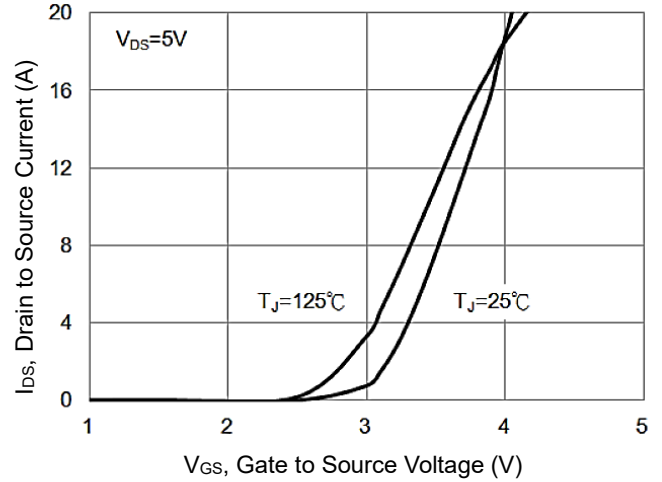

Switching Test Circuit
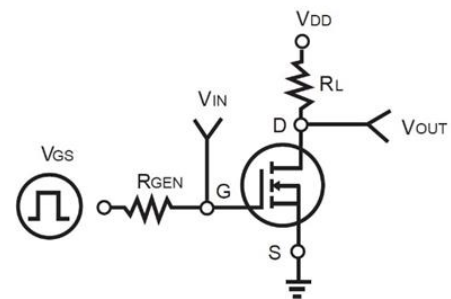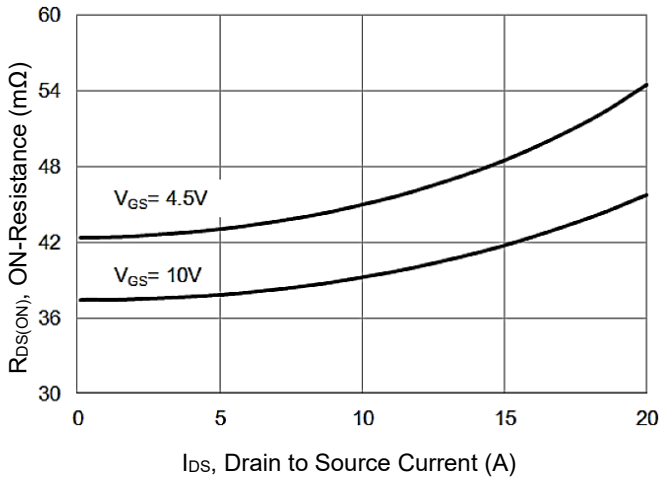
CHARACTERISTICS CURVES

On-Region Characteristics
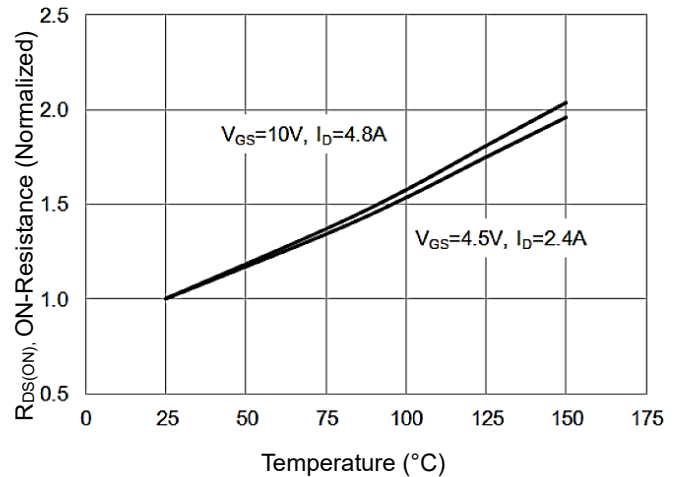

Transfer Characteristics
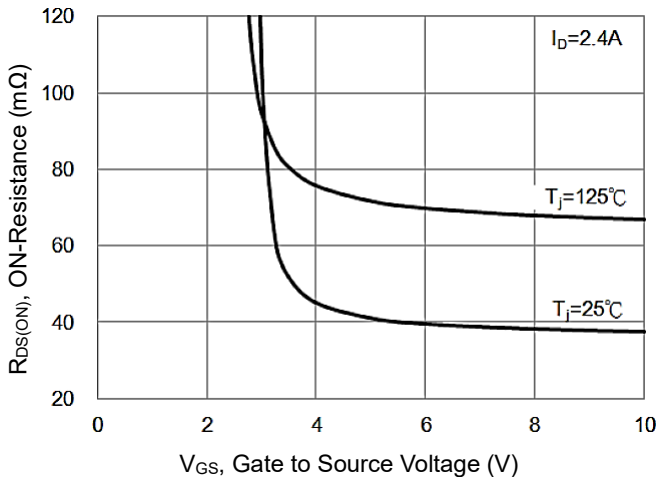

On-Resistance vs. Drain Current

On-Resistance vs. Junction Temperature

On-Resistance Vairation with V_{GS}
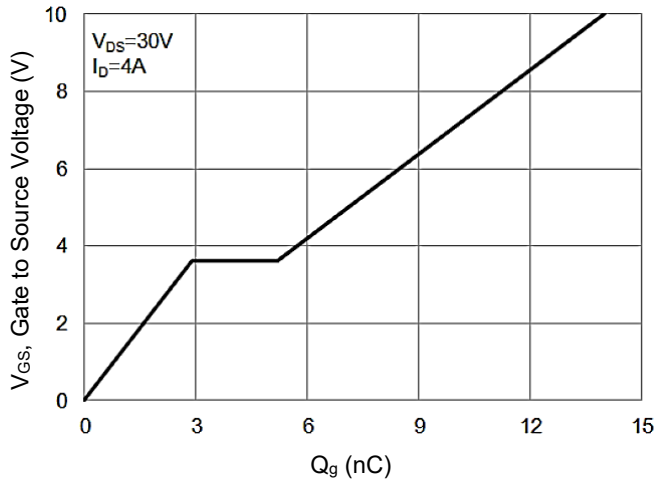

Body Diode Characteristics

CHARACTERISTICS CURVES

Gate-Charge Characteristics

V_{DS}=30V
I_D=4A

V_{GS}, Gate to Source Voltage (V)
Q_g (nC)

Breakdown Voltage Variation vs. Temperature

I_D=250uA

BV_{DSS} ,Breakdown Voltage (V)
Temperature (°C)
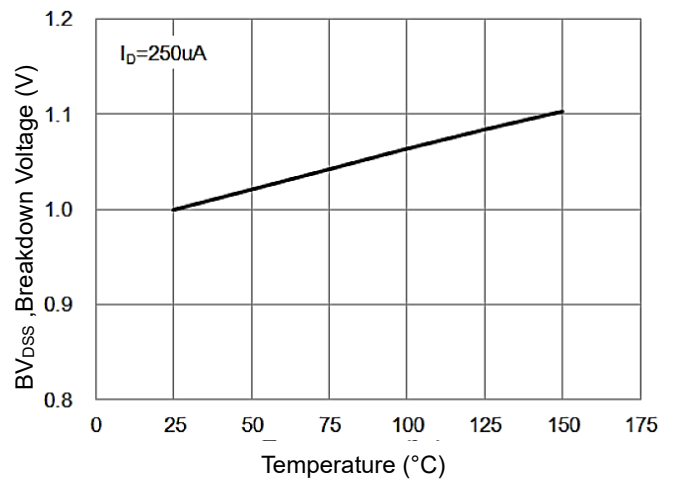
Threshold Voltage Variation with Temperature

I_D=250uA

V_{th-G-S} Variance
Temperature (°C)
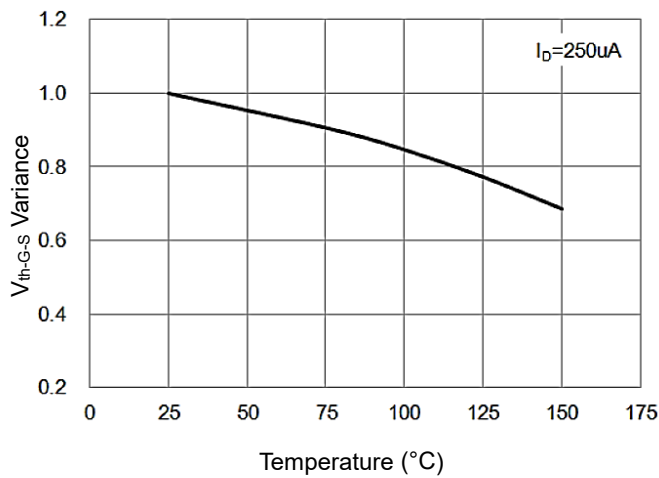
Capacitance vs. Drain-Source Voltage

V_{GS}= 0V
f = 1MHz

Ciss
Coss
Crss

Capacitance (pF)
V_{DS}, Drain to Source Voltage (V)
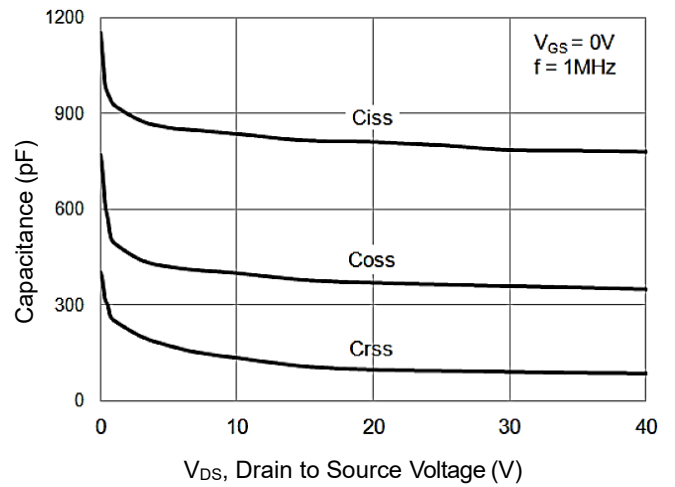
Maximum Safe Operating Area

Operation this area is
Limited by $R_{DS(ON)}$

10us
100us
1ms
10ms
DC

Notes:
1. Tj=150℃
2. Ta=25℃
3. Single pulse

I_D, Drain Current (A)
V_{DS}, Drain to Source Voltage (V)
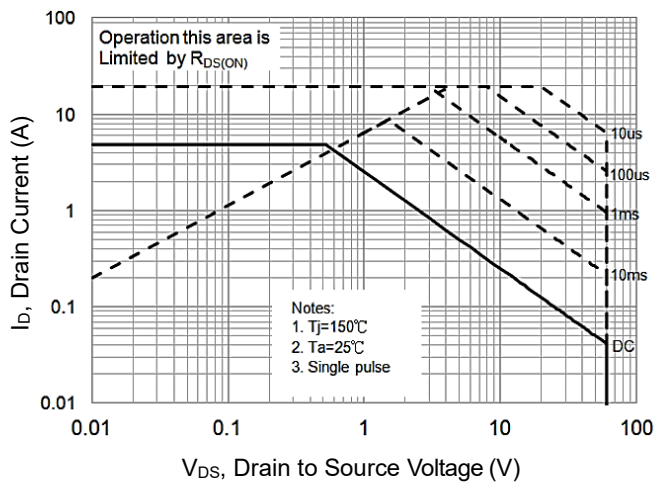
Normal Transient Thermal Impedance

D=0.5
0.2
0.1
0.05
0.02
0.01

Single Pulse

$T_{J,PK}$=Ta+P_{DM}*Z_{TH-JA}*R_{TH-JA}
R_{TH-JA} = 50℃/W
Ta = 25℃

P_{DM}
$D = \dfrac{PW}{T}$
PW
T

Z_{TH-JA}, Normalized Transient Thermal
T, Pulse Width (Sec)