P-Channel MOSFET
-30V -9.3A 2.5W SO-8

MFT3P9A3S8

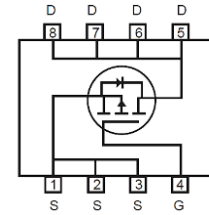**MERITEK**

FEATURE

- $R_{DS(ON)}$<18mΩ, V_{GS}=-10V, I_D=-4A

- $R_{DS(ON)}$<26mΩ, V_{GS}=-4.5V, I_D=-2A

- **Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$**

- **High Power and Current Handing Capability**
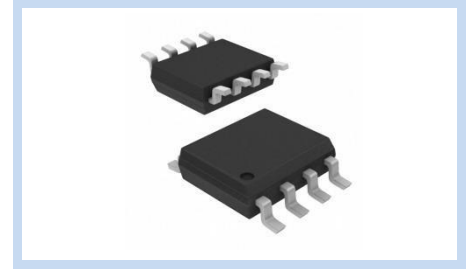
MECHANICAL DATA

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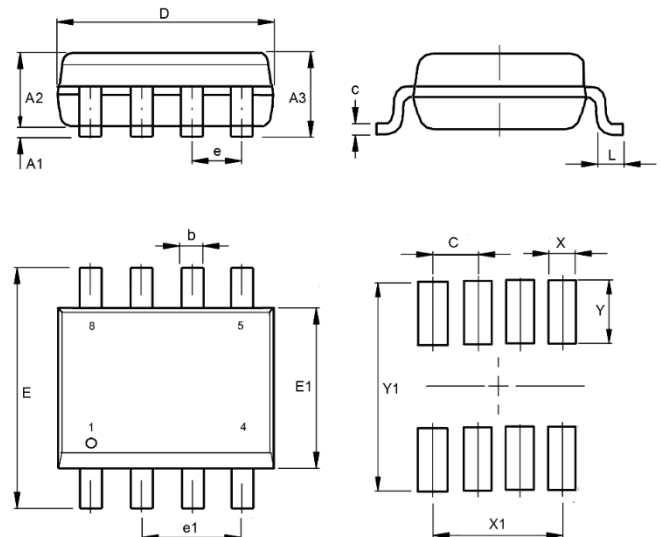
- **Terminals: Solderable per MIL-STD-750, Method 2026**

MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current – Continuous	I_D	-9.3	A
Drain Current – Pulsed	I_{DM}	-37.2	A
Maximum Power Dissipation	P_D	2.5	W
Thermal Resistance Junction to Ambient	$R_{θJA}$	50	°C/W
Operating Junction Temperature Range	T_J	-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 = -250µA	BV_{DSS}	-30	--	--	V
Zero Gate Voltage Drain Current	V_{DS} = -30V, V_{GS} = 0V	I_{DSS}	--	--	-1	µA
Gate Body Leakage Current, Forward	V_{GS} = 20V, V_{DS} = 0V	I_{GSSF}	--	--	100	nA
Gate Body Leakage Current, Reverse	V_{GS} = -20V, V_{DS} = 0V	I_{GSSR}	--	--	-100	nA
On Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Static Drain-Source On-Resistance	V_{GS} = -10V, I_D = -4A	$R_{DS(ON)}$	--	14	18	mΩ
	V_{GS} = -4.5V, I_D = -2A		--	21	26	mΩ
Gate Threshold Voltage	V_{GS} = V_{DS}, I_D = -250µA	$V_{GS(th)}$	-0.8	-	-2	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS} = -24V, V_{GS} = -4.5V, I_D = -1A	Q_g	--	18	--	nC
Gate-Source Charge		Q_{gs}	--	3.4	--	nC
Gate-Drain Charge		Q_{gd}	--	7.1	--	nC
Turn-On Delay Time	V_{DD} = -24V, I_D = -1A, V_{GS} = -10V, R_{GEN} = 6Ω	$T_{d(on)}$	--	16	--	ns
Rise Time		T_r	--	8	--	ns
Turn-Off Delay Time		$T_{d(off)}$	--	75	--	ns
Fall Time		T_f	--	36	--	ns
Input Capacitance	V_{DS} = -15V, V_{GS} = 0V, F = 1.0MHz	C_{iss}	--	1710	--	pF
Output Capacitance		C_{oss}	--	260	--	pF
Reverse Transfer Capacitance		C_{rss}	--	185	--	pF
Drain-Source Body Diode	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Drain-Source Diode Forward Current	--	I_S	--	--	-2	A
Drain-Source Diode Forward Voltage	V_{GS} = 0V, I_S = -2A	V_{SD}	--	--	-1.2	V

Note:
1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

Switching Time Waveform
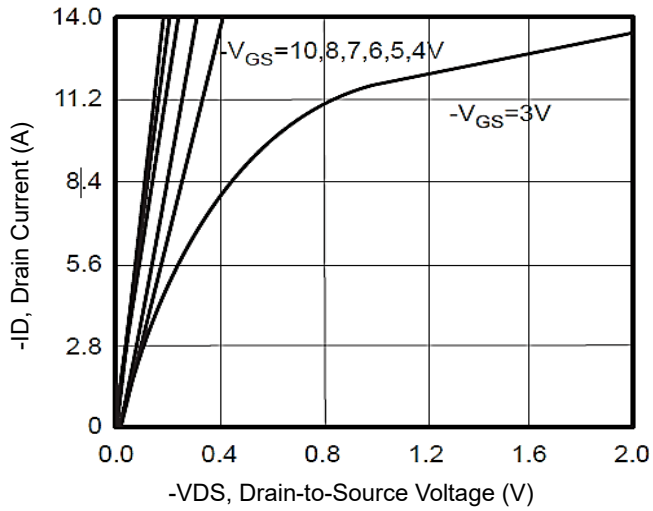
Switching Test Circuit
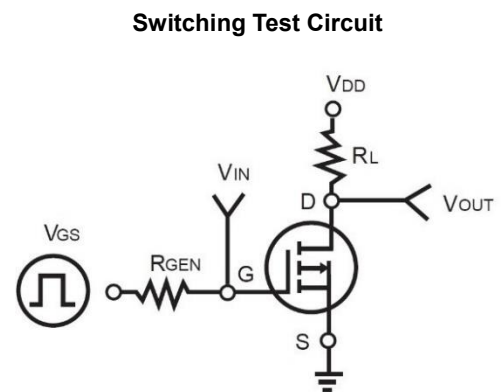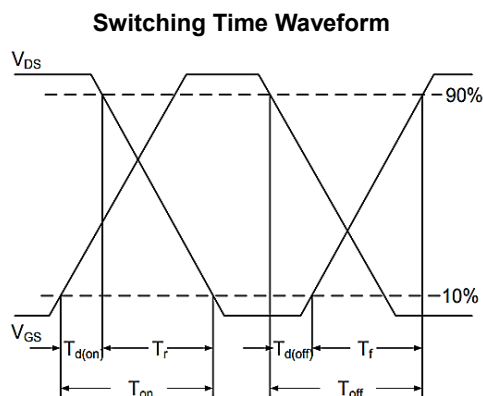
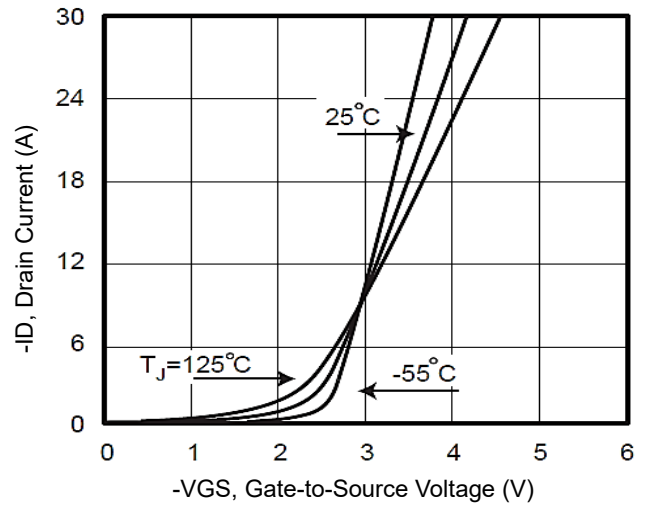# P-Channel MOSFET
-30V -9.3A 2.5W SO-8

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CHARACTERISTIC CURVES

Drain Current vs. V$_{DS}$

Drain Current vs. V$_{GS}$

Capacitance pF vs. V$_{DS}$
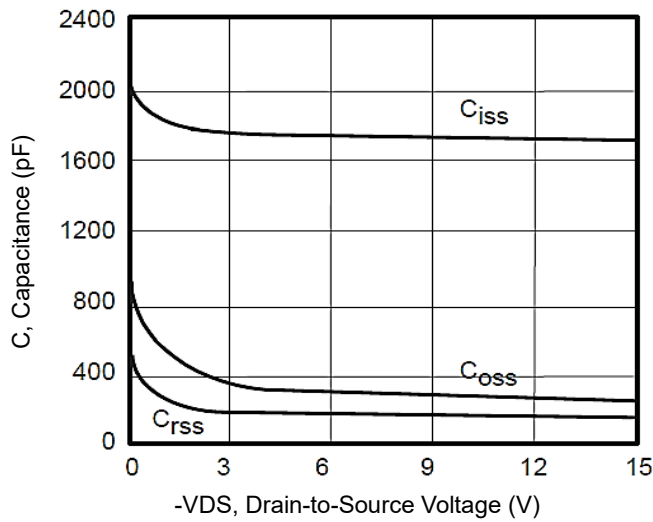
On Resistance vs. T$_J$
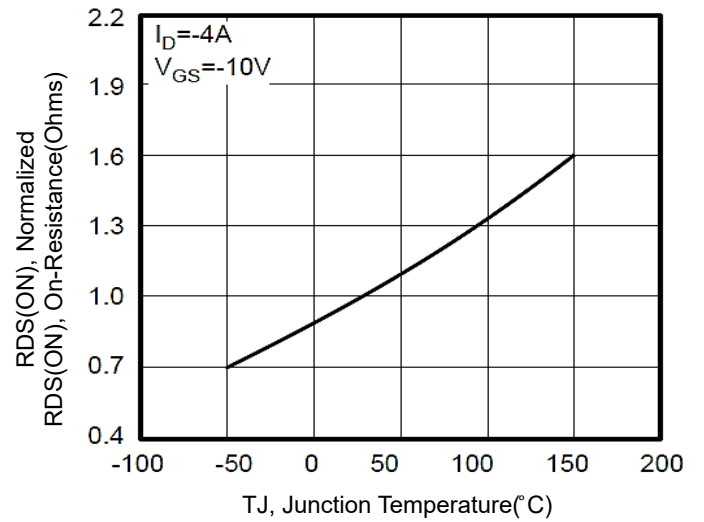
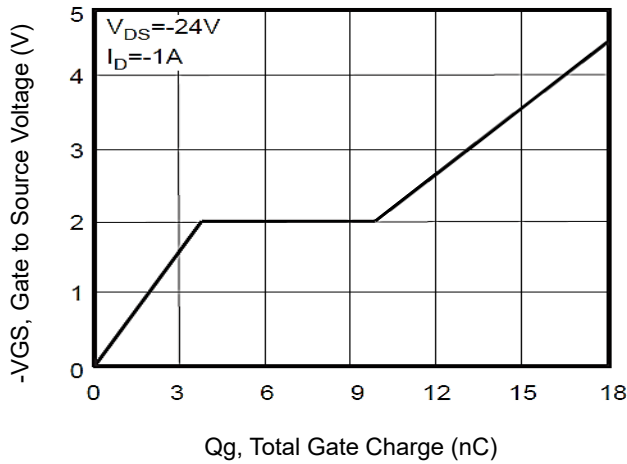**Gate Threshold Variation vs. T$_J$**
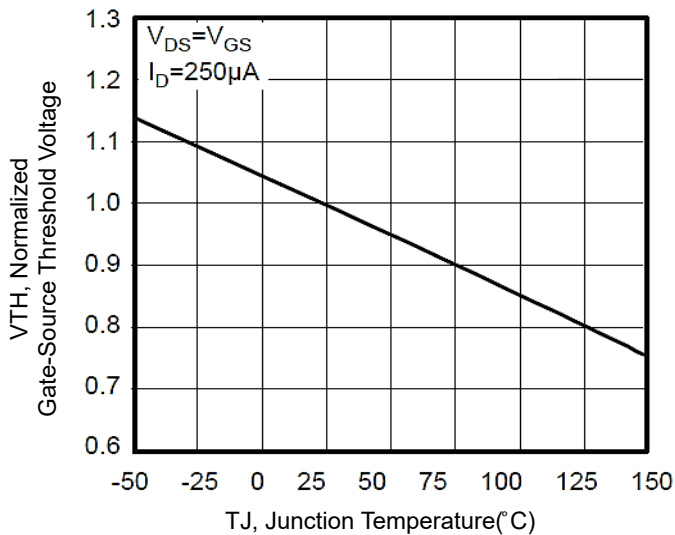
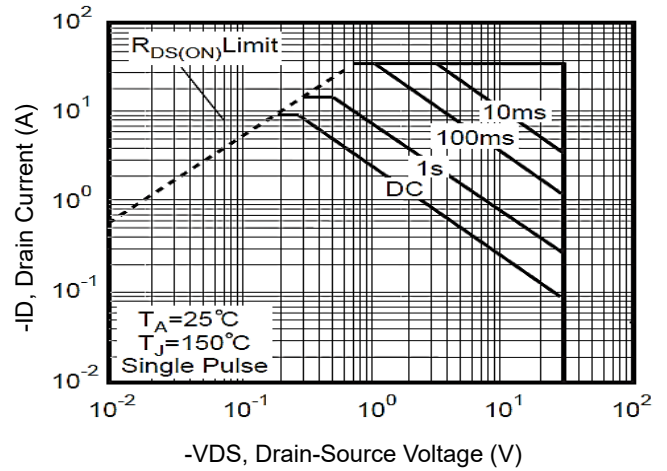**Source-Drain Current vs. V$_{SD}$**
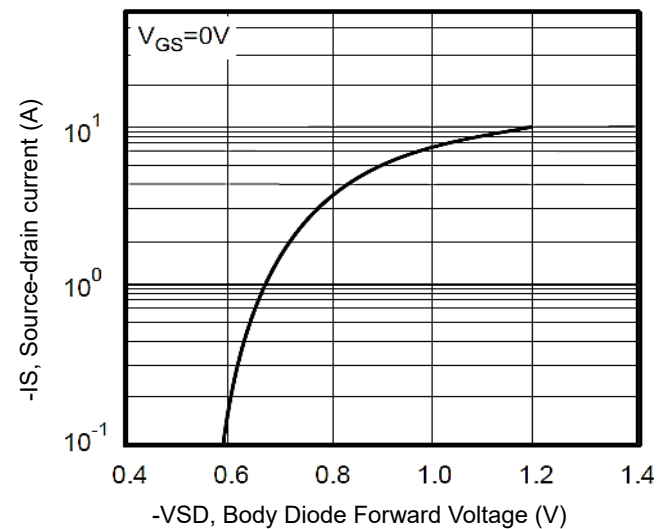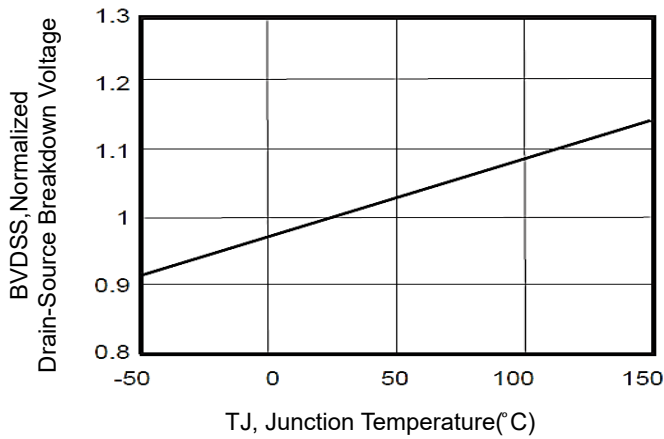
CHARACTERISTICS CURVES

Gate to Source Voltage vs. Q$_g$

Maximum Safe Operating Area

Gate Threshold Variation vs. T$_J$

Normalized Thermal Transient Impedance Curve

1. R$_{JA}$(t)=r(t) * R$_{JA}$
2. R$_{JA}$=See Datasheet
3. T$_{JM}$-T$_A$ = P* R$_{JA}$(t)
4. Duty Cycle, D=t1/t2