

P Channel MOSFET

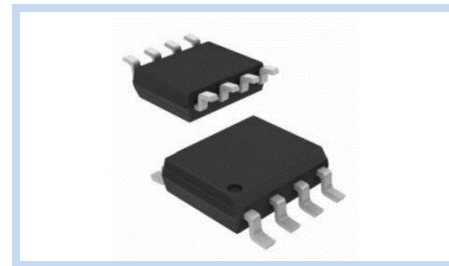
60V 5.9A SOP-8 AEC-Q101

MFT6P5A9S8A

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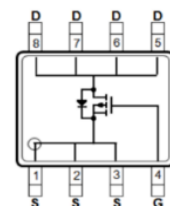
FEATURE

- $R_{DS(ON)} < 47m\Omega$ at $V_{GS} = -10V$
- $R_{DS(ON)} < 60m\Omega$ at $V_{GS} = -4.5V$
- Advanced Trench Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- AEC-Q101 Compliant



MECHANICAL DATA

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

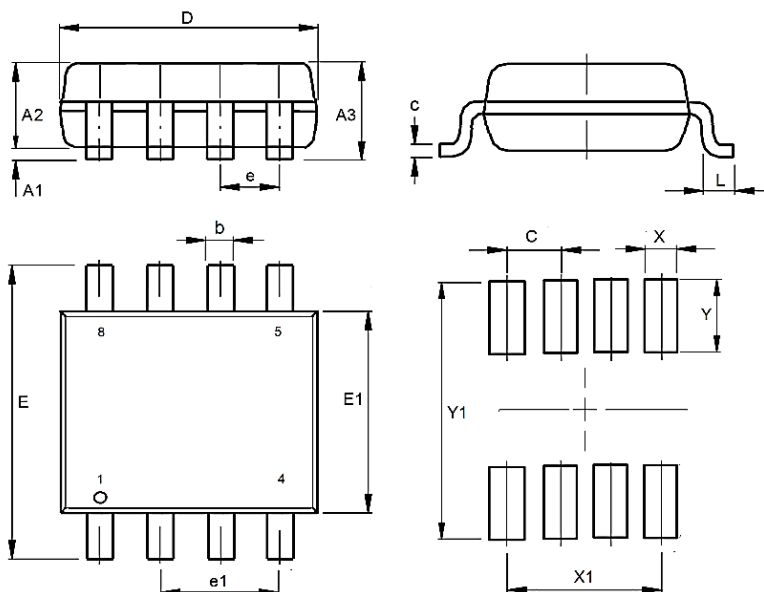


MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current – Continuous	I_D	-5.9	A
Drain Current – Pulsed	I_{DM}	-30	A
Power Dissipation	P_D	3.1	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	59	$^{\circ}C/W$
Operating Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}C$

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.10	0.25
A2	1.35	1.55
A3	1.35	1.75
b	0.33	0.51
c	0.17	0.25
D	4.70	5.10
E	5.80	6.20
E1	3.80	4.00
e	1.27	
L	0.40	1.27
X	0.60	
X1	3.81	
Y	1.52	
Y1	7.00	
C	1.27	



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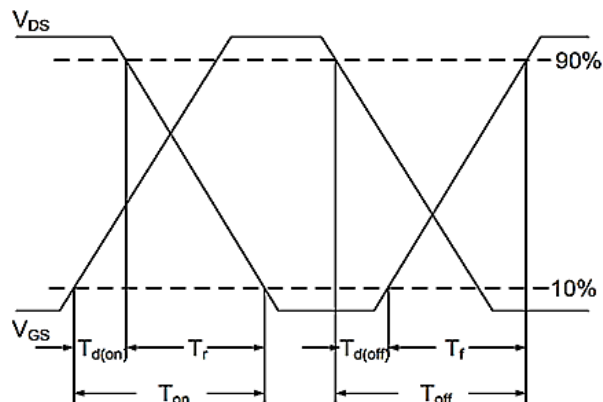
ELECTRICAL CHARACTERISTICS

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	$V_{GS}=-10V$, $I_D=-6A$	$R_{DS(ON)}$	-	35	47	m Ω
	$V_{GS}=-4.5V$, $I_D=-3A$		-	45	60	
Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	$V_{GS(th)}$	-1.3	-1.8	-2.5	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=-30V$, $V_{GS}=-10V$, $I_D=-3A$	Q_g	-	18.7	-	nC
Gate-Source Charge		Q_{gs}	-	4.7	-	
Gate-Drain Charge		Q_{gd}	-	3.0	-	
Turn-On Delay Time	$V_{DS}=-30V$, $V_{GS}=-10V$, $R_{GS}=6\Omega$, $I_D=-3A$	$T_{d(on)}$	-	7.5	-	ns
Rise Time		T_r	-	39.5	-	
Turn-Off Delay Time		$T_{d(off)}$	-	43.6	-	
Fall Time		T_f	-	55.1	-	
Input Capacitance	$V_{DS}=-30V$, $V_{GS}=0V$, $F=1MHz$	C_{iss}	-	1100	-	pF
Output Capacitance		C_{oss}	-	350	-	
Reverse Transfer Capacitance		C_{rss}	-	28	-	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Current	--	I_S	-	-	-6	A
Diode Forward Voltage	$V_{GS}=0V$, $I_S=-6A$	V_{SD}	-	-	-1.3	V

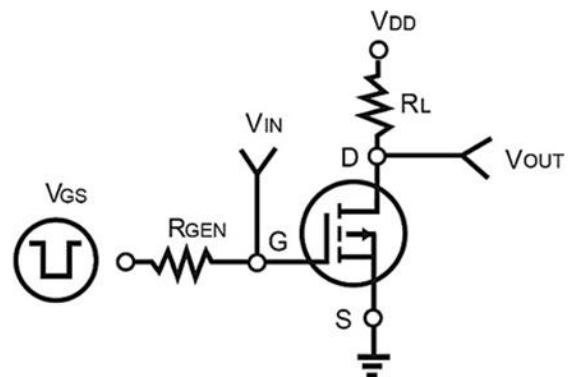
Note:

1. Repetitive rating, pulse width limited by maximum junction temperature.
2. P_d is based on maximum junction temperature, using ≤ 10 seconds junction-ambient thermal resistance.

Switching Time Waveform

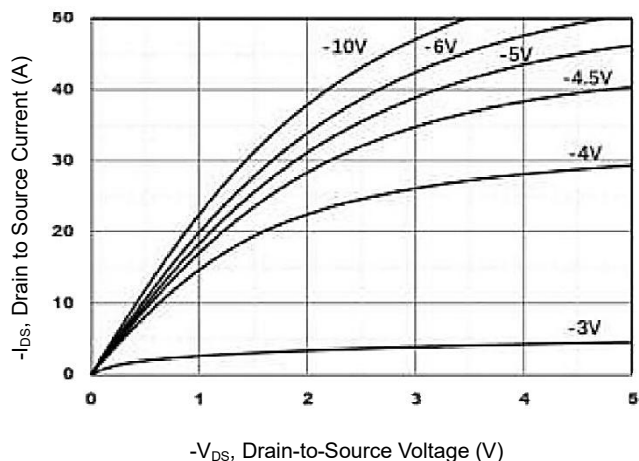


Switching Test Circuit

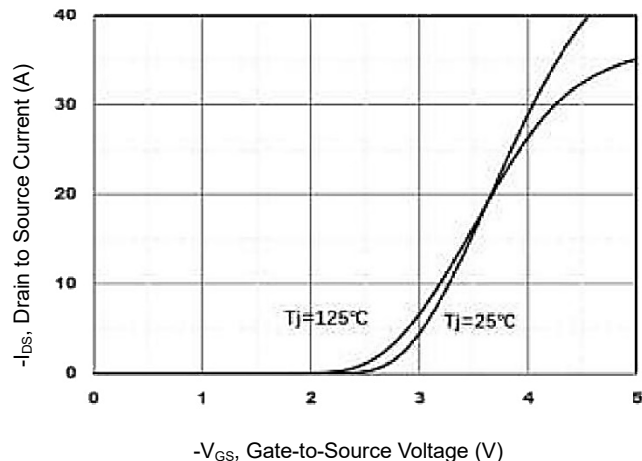


CHARACTERISTIC CURVES

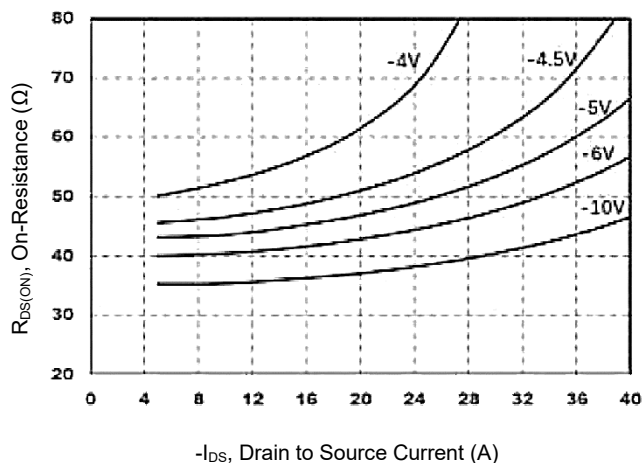
On Region Characteristics



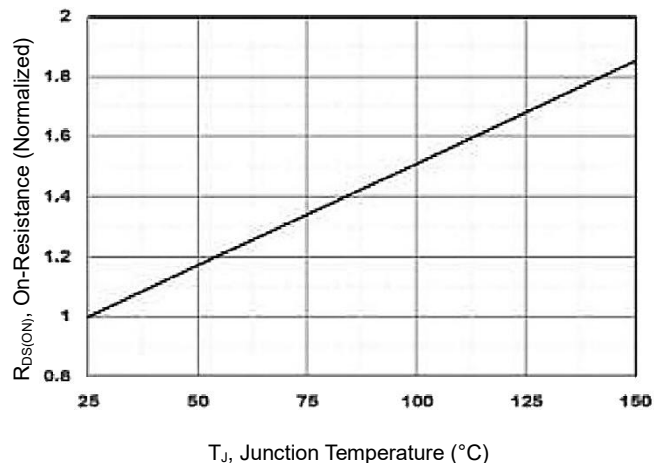
Transfer Characteristics



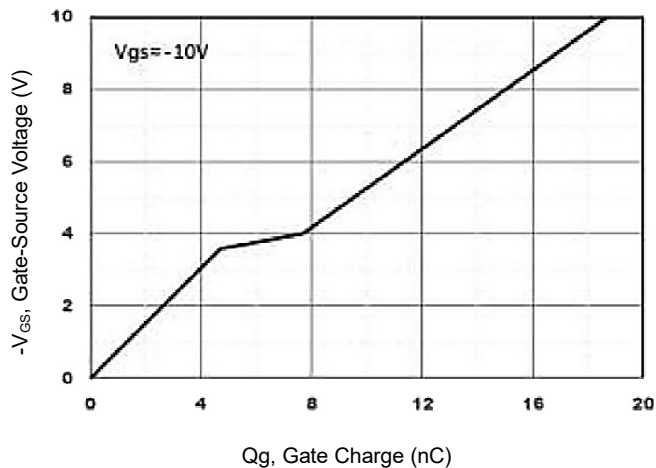
On-Resistance vs. Drain Current



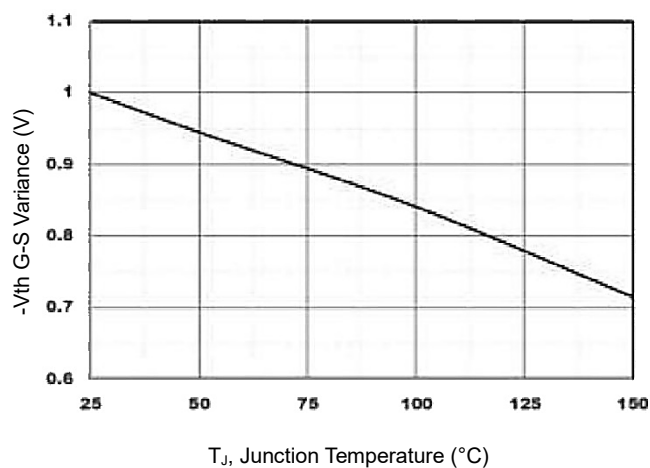
On-Resistance vs. Junction Temperature



Gate Charge Characteristics



Threshold Voltage Variance vs. Temperature



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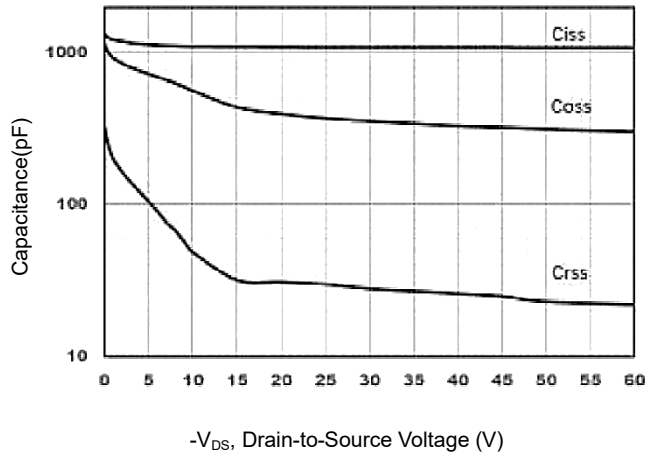
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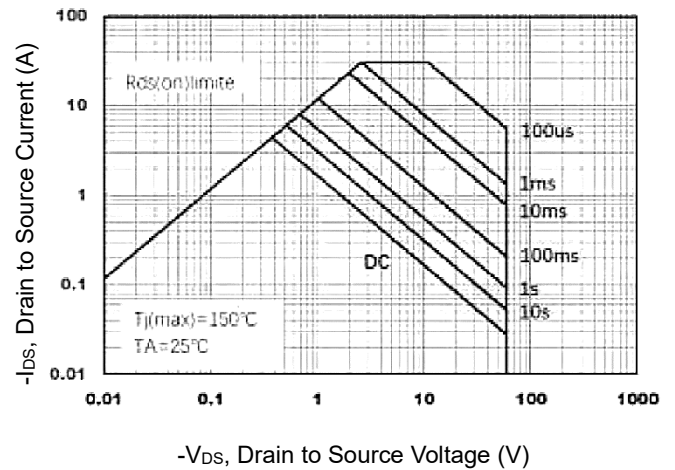
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CHARACTERISTIC CURVES

Capacitance vs. Drain-Source Voltage



Maximum Safe Operating Area



Normalized Transient Thermal Impedance vs Pulse Width

