

P-Channel MOSFET

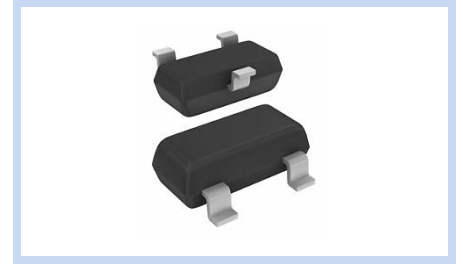
30V 2.9A 1.25W SOT-23

MFT3P2A9S23

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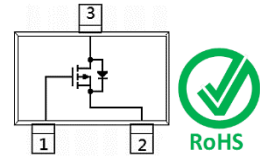
FEATURE

- $R_{DS(ON)} < 110m\Omega$, $V_{GS} = -10V$, $I_D = -2.9A$
- $R_{DS(ON)} < 150m\Omega$, $V_{GS} = -4.5V$, $I_D = -1.9A$
- Advanced Trench Process Technology
- Application: Switch Load, PWM Application, etc.



MECHANICAL DATA

- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

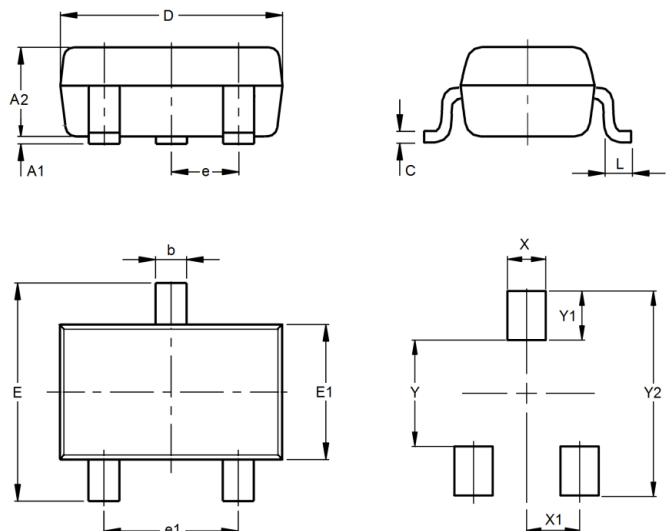


MAXIMUM RATINGS

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	V_{DS}	-30	V	
Gate-Source Voltage	V_{GS}	± 20	V	
Drain Current – Continuous	I_D	-2.9	A	
Drain Current – Pulsed	I_{DM}	-11.6	A	
Power Dissipation	P_D	$T_A = 25^\circ C$	1.25	W
		Derate above $25^\circ C$	10	mW/ $^\circ C$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	100	$^\circ C/W$	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$	

DIMENSIONS

SOT-23	Min (mm)	Max (mm)
A1	0.00	0.10
A2	0.80	1.10
b	0.35	0.50
C	0.08	0.20
D	2.80	3.04
e	0.90	1.00
e1	1.80	2.00
E	2.20	2.60
E1	1.20	1.40
L	0.15	--
X	0.80	
X1	0.95	
Y	1.10	
Y1	0.90	
Y2	2.90	



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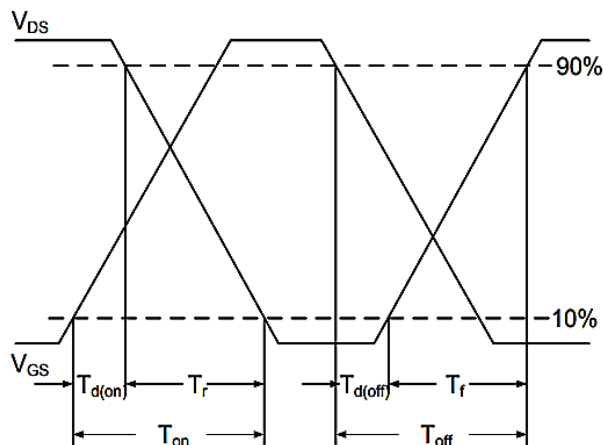
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-30	--	--	V
Gate-Source Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	I_{GSS}	--	± 10	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V$	I_{DSS}	--	-0.01	-1	μA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-2.9A$	$R_{DS(ON)}$	--	92	110	m Ω
	$V_{GS}=-4.5V, I_D=-1.9A$		--	120	150	
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	$V_{GS(th)}$	-1.0	-1.31	-2.1	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Input Capacitance	$V_{DS}=-15V, V_{GS}=0V, F=1.0MHz$	C_{iss}	--	396	--	pF
Output Capacitance		C_{oss}	--	47	--	
Reverse Transfer Capacitance		C_{rss}	--	36	--	
Turn-On Delay Time	$V_{DD}=-15V, I_D=-2.9A, V_{GS}=-10V, R_G=6\Omega$	$T_{d(on)}$	--	5	--	ns
Rise Time		T_r	--	30	--	
Turn-Off Delay Time		$T_{d(off)}$	--	25	--	
Fall Time		T_f	--	8	--	
Total Gate Charge	$V_{DS}=-15V, V_{GS}=-10V, I_D=-2.9A$	Q_g	--	9.8	--	nC
Gate-Source Charge		Q_{gs}	--	1.5	--	
Gate-Drain Charge		Q_{gd}	--	2.2	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	--	I_S	--	--	-1.5	A
Diode Forward Voltage	$I_S=-1A, V_{GS}=0V$	V_{SD}	--	-0.77	-1.2	V

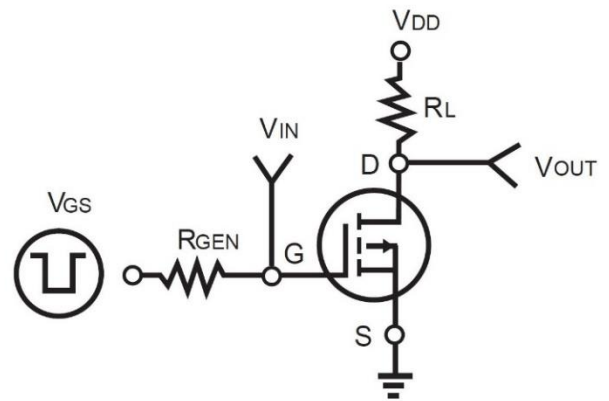
Notes:

- $T_A=25^\circ C$ unless otherwise noted.
- Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- Essentially independent of operating temperature typical characteristics.
- $R_{\theta JA}$ 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 FR-4 with 2oz. square pad of copper.
- The maximum current rating is package limited.

Switching Time Waveform

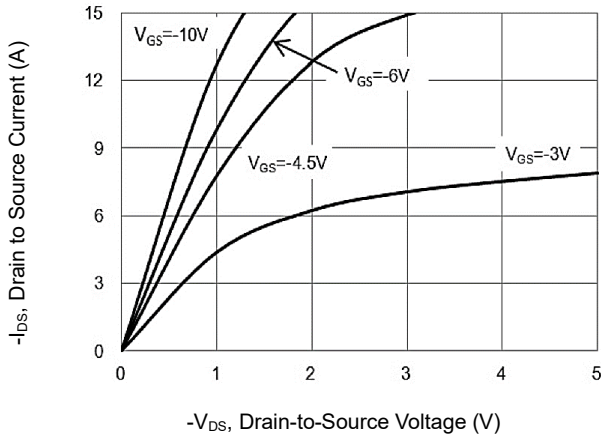


Switching Test Circuit

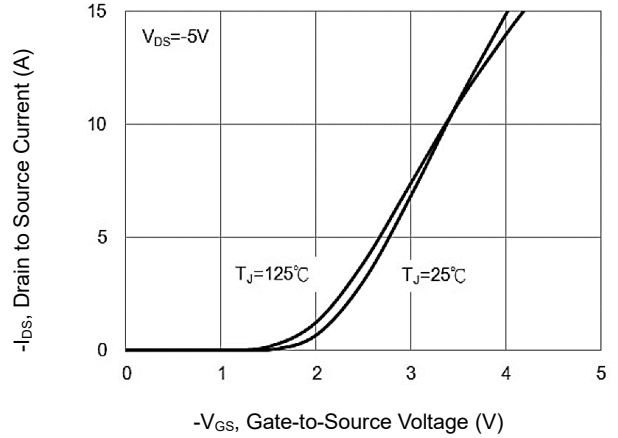


CHARACTERISTIC CURVES

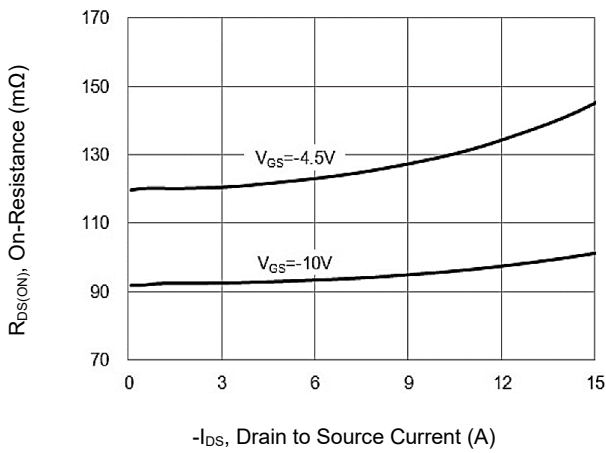
On Region Characteristics



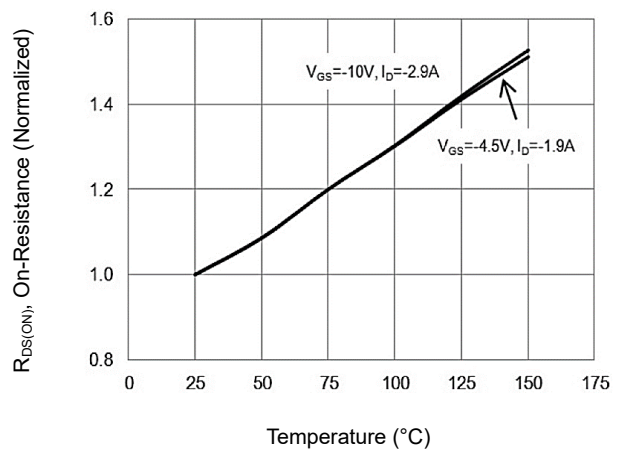
Transfer Characteristics



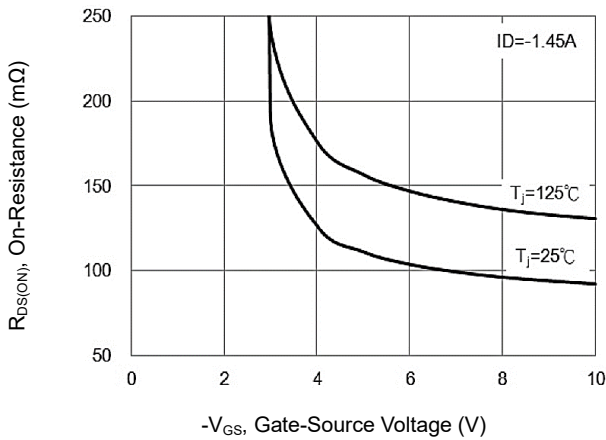
On-Resistance vs. Drain Current



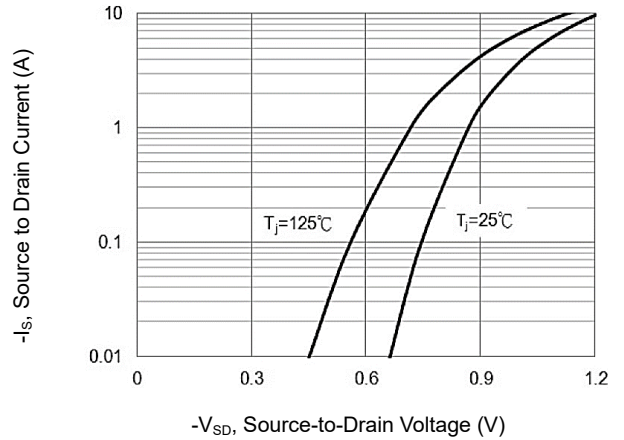
On-Resistance vs. Junction Temperature



On-Resistance Variation with V_GS



Body Diode Characteristics



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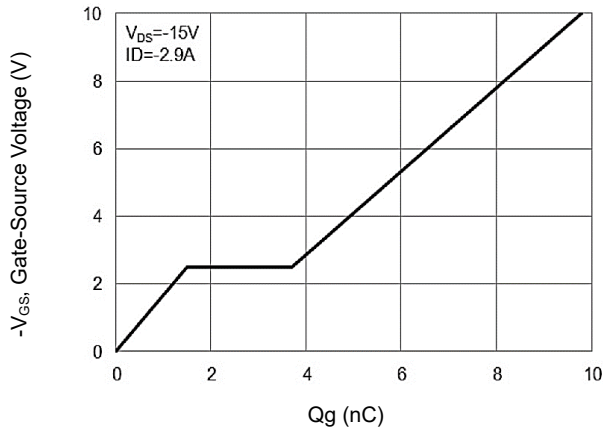
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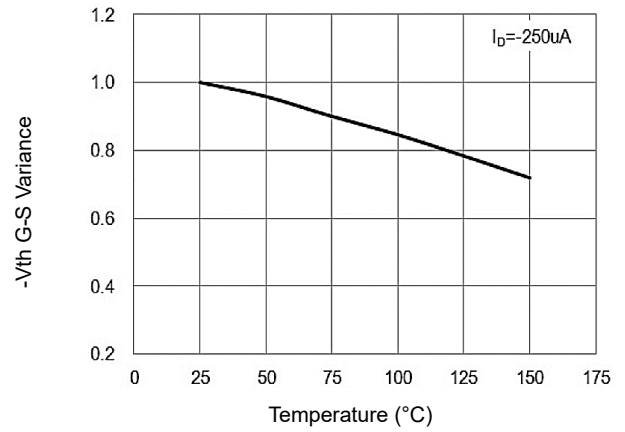
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CHARACTERISTIC CURVES

Gate Charge Characteristics



Threshold Voltage Variance vs. Temperature



Capacitance vs. Drain-Source Voltage

