

N-Channel MOSFET

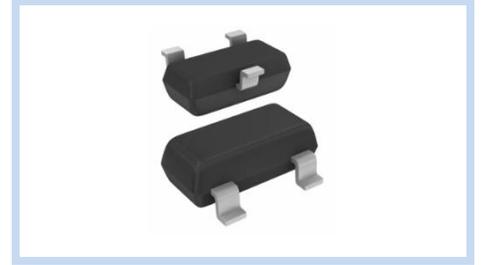
60V 2.5A SOT-23 AEC-Q101

MFT6N2A5S23A

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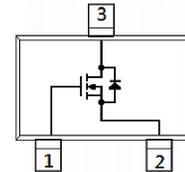
FEATURE

- $R_{DS(ON)} < 75m\Omega$, $V_{GS}=10V$, $I_D=2A$
- $R_{DS(ON)} < 90m\Omega$, $V_{GS}=4.5V$, $I_D=1A$
- Advanced Trench Poceess Technology
- Application: Switch Load, PWM Application, etc
- AEC-Q101 Qualified



MECHANICAL DATA

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

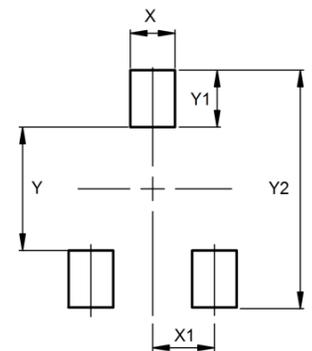
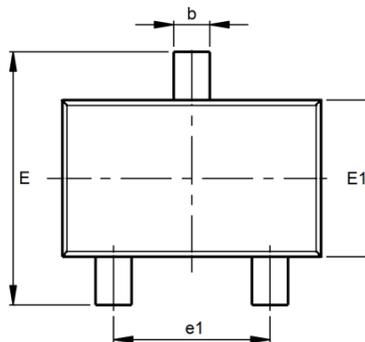
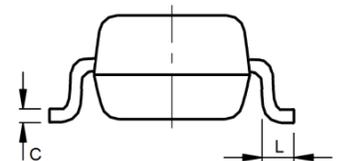
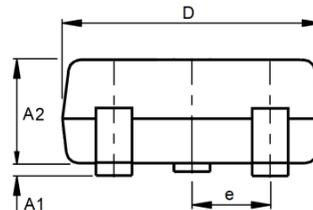


MAXIMUM RATINGS

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	V_{DS}	60	V	
Gate-Source Voltage	V_{GS}	± 20	V	
Drain Current – Continuous	I_D	2.5	A	
Drain Current – Pulsed	I_{DM}	10	A	
Power Dissipation	P_D	$T_A=25^\circ C$	1.25	W
		Derate above $25^\circ C$	10	mW/ $^\circ C$
Operating Junction Temperature and Storage Temperature	T_J, T_{stg}	-55 to 150	$^\circ C$	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	100	$^\circ C / W$	

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.00	0.10
A2	0.90	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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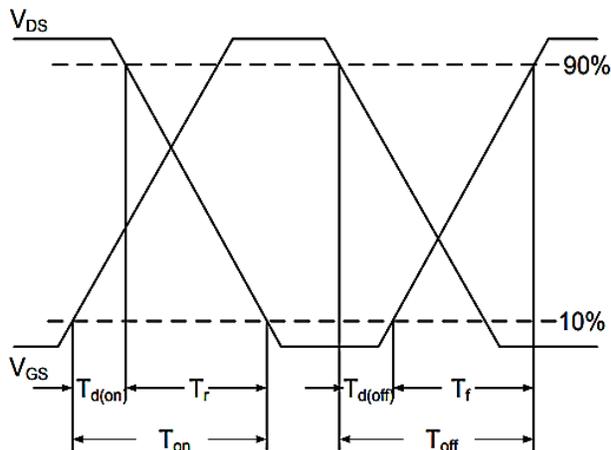
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	60	--	--	V
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	1.0	1.75	2.5	V
Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=48V, V_{GS}=0V$	I_{DSS}	--	--	1	μA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=2A$	$R_{DS(on)}$	--	55	75	m Ω
	$V_{GS}=4.5V, I_D=1A$		--	63	90	
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Input Capacitance	$V_{DS}=15V, V_{GS}=0V$ $F=1.0MHz$	C_{iss}	--	509	--	pF
Output Capacitance		C_{oss}	--	47	--	
Reverse Transfer Capacitance		C_{rss}	--	23	--	
Turn-On Delay Time	$V_{DS}=30V, I_D=2A,$ $V_{GS}=10V, R_G=3.3\Omega$	$T_{d(on)}$	--	3.2	--	nS
Rise Time		T_r	--	9.7	--	
Turn-Off Delay Time		$T_{d(off)}$	--	18.5	--	
Fall Time		T_f	--	6.4	--	
Total Gate Charge	$V_{DS}=48V, V_{GS}=10V, I_D=2A$	Q_g	--	9.3	--	nC
Gate-Source Charge		Q_{gs}	--	2.2	--	
Gate-Drain Charge		Q_{gd}	--	1.9	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Voltage	$I_S=1A, V_{GS}=0V$	V_{SD}	--	0.77	1.2	V
Diode Forward Current	---	I_S	--	--	2.5	A

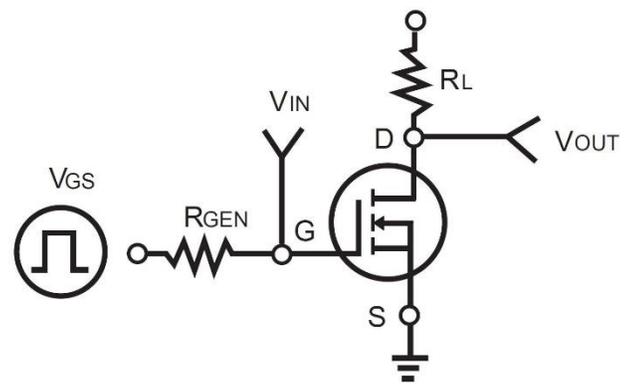
Note:

- $T_A = 25^\circ C$ Exposure to absolute maximum rating conditions for extended periods may remain possibility to affect device reliability
- Pulse width < 300 μs , Duty cycle < 2%.
- $R_{\theta JA}$ 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.
- Guaranteed by design, not subject to production testing.
- The maximum current rating is package limited.

Switching Time Waveform



Switching Test Circuit



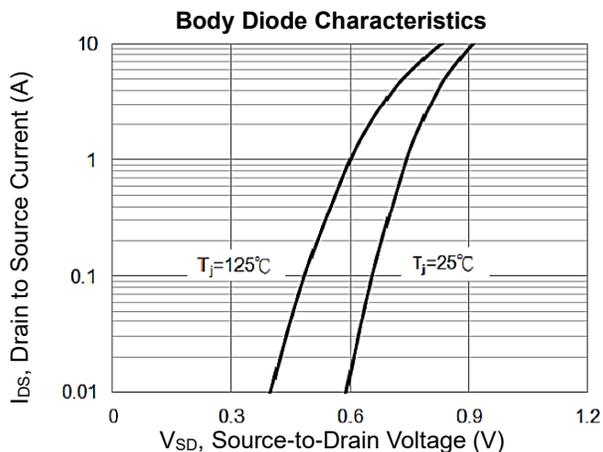
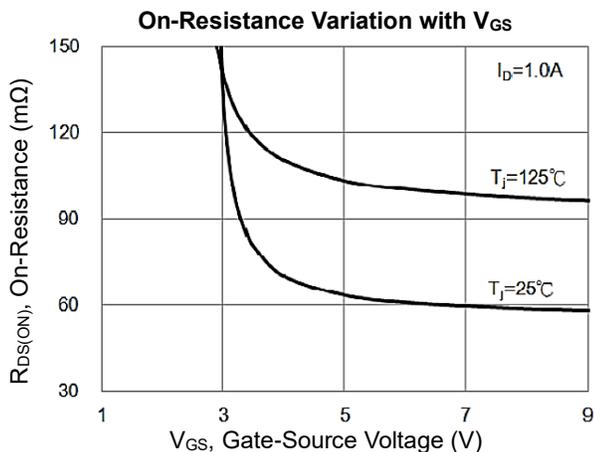
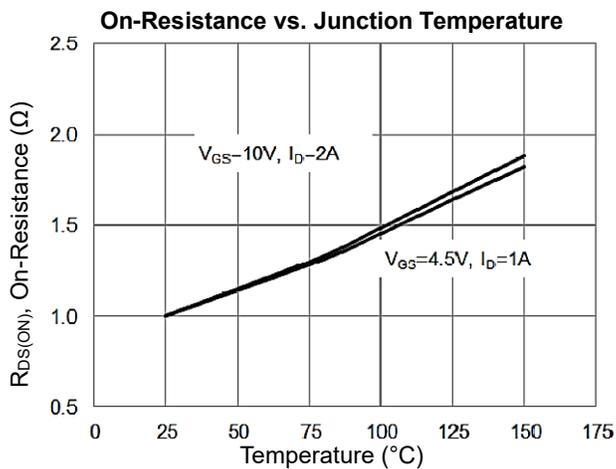
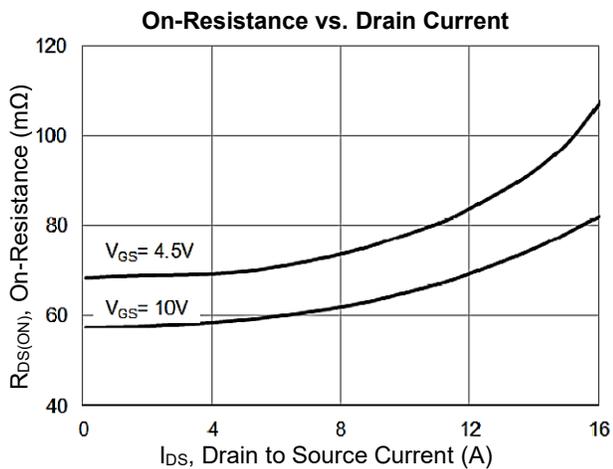
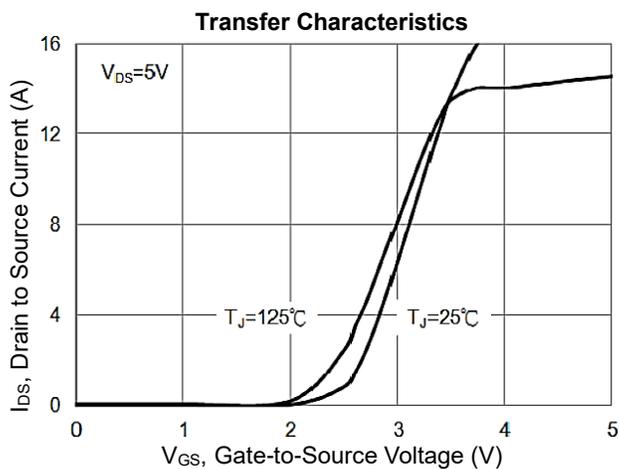
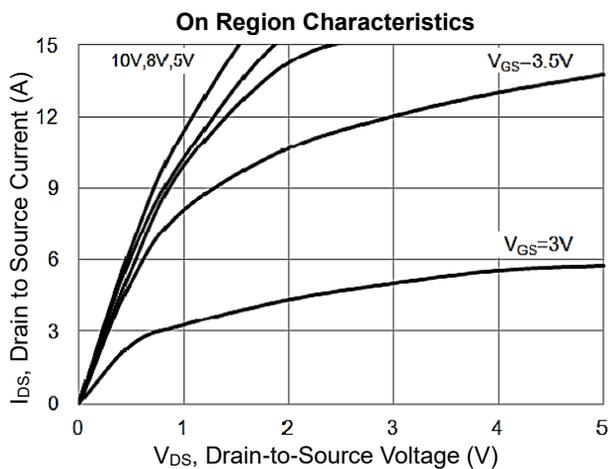
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CHARACTERISTIC CURVES



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