

N-Channel MOSFET

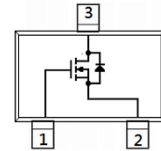
30V 6.5A 1.4W SOT-23

MFT3N6A5S23

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FEATURE

- $R_{DS(ON)} \leq 27m\Omega$ at $V_{GS}=10V$
- $R_{DS(ON)} \leq 32m\Omega$ at $V_{GS}=4.5V$
- $R_{DS(ON)} \leq 48m\Omega$ at $V_{GS}=2.5V$
- High Power and Current Handling Capability
- Application: Battery Switch, DC/DC Converter



MECHANICAL DATA

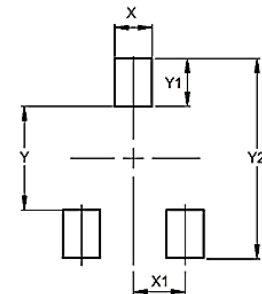
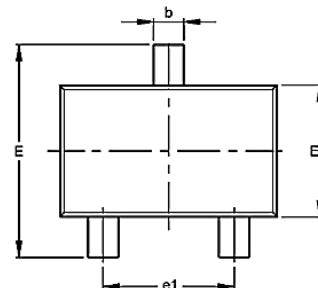
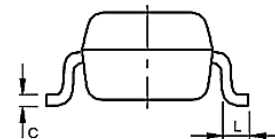
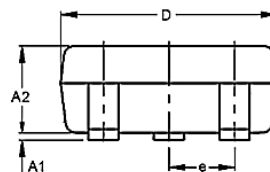
- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current – Continuous	I_D	6.5	A
Drain Current – Pulsed	I_{DM}	26	A
Power Dissipation	P_D	1.4	W
Thermal Resistance form Junction to Ambient	$R_{\theta JA}$	89.3	$^{\circ}C/W$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^{\circ}C$

DIMENSIONS

Item	Min (mm)	Max (mm)
A1	0.00	0.10
A2	1.05	1.15
b	0.30	0.50
c	0.10	0.20
D	2.82	3.02
e	0.95 TYP	
e1	1.80	2.00
E	2.65	2.95
E1	1.50	1.70
L	0.30	0.60
X	0.80	
X1	0.95	
Y	1.22	
Y1	0.80	
Y2	2.82	



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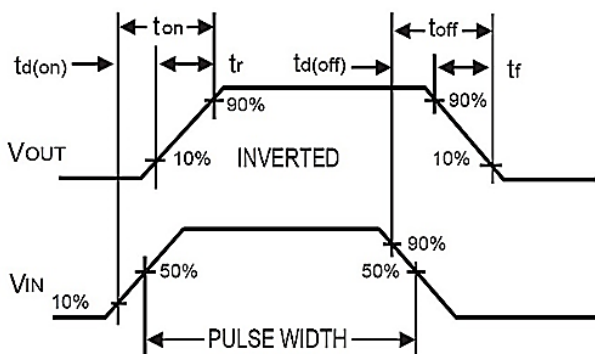
ELECTRICAL CHARACTERISTICS

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 Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	0.6	0.95	1.3	V
Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$	I_{GSS}	--	--	± 0.1	μA
Zero Gate Voltage Drain Current	$V_{DS}=24V, V_{GS}=0V$	I_{DSS}	--	--	1	μA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=5.8A$	$R_{DS(ON)}$	--	20	27	m Ω
	$V_{GS}=4.5V, I_D=5A$		--	25	32	
	$V_{GS}=2.5V, I_D=4A$		--	30	48	
Dynamic Characteristics	Conditions	Symbol	--	Typ.	Max	Unit
Input Capacitance	$V_{DS}=15V, V_{GS}=0V, F=1MHz$	C_{iss}	--	765	--	pF
Output Capacitance		C_{oss}	--	68	--	
Reverse Transfer Capacitance		C_{rss}	--	53	--	
Turn-On Delay Time	$V_{DD}=15V, I_D=3A, V_{GS}=10V, R_G=3\Omega$	$T_{d(on)}$	--	5	--	nS
Rise Time		T_r	--	11	--	
Turn-Off Delay Time		$T_{d(off)}$	--	25	--	
Fall Time		T_f	--	3	--	
Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D=3A$	Q_g	--	18	--	nC
Gate-Source Charge		Q_{gs}	--	3	--	
Gate-Drain Charge		Q_{gd}	--	2.2	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Current	--	I_S	--	--	6.5	A
Diode Forward Voltage	$I_S=1A, V_{GS}=0V, T_J=25^\circ C$	V_{SD}	--	--	1.2	V

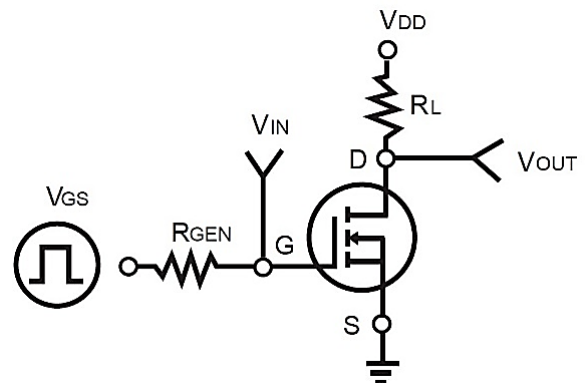
Note:

1. $T_A=25^\circ C$, unless otherwise noted

Switching Time Waveform



Switching Test Circuit



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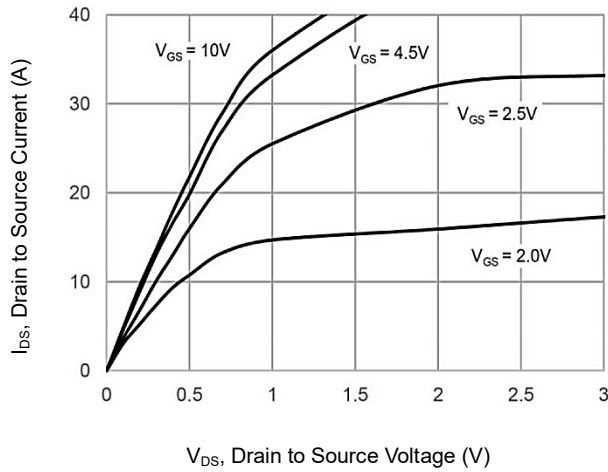
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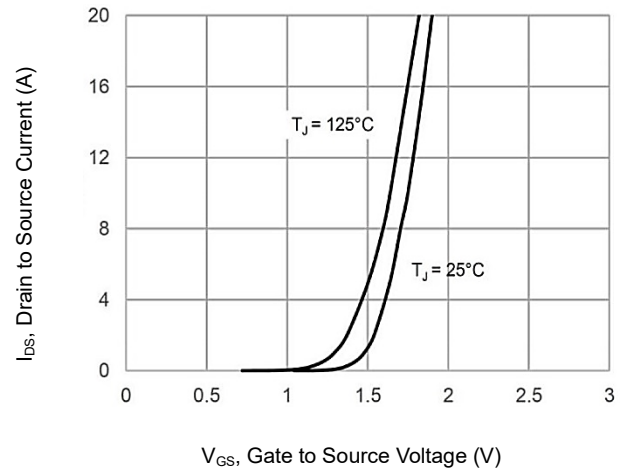
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CHARACTERISTIC CURVES

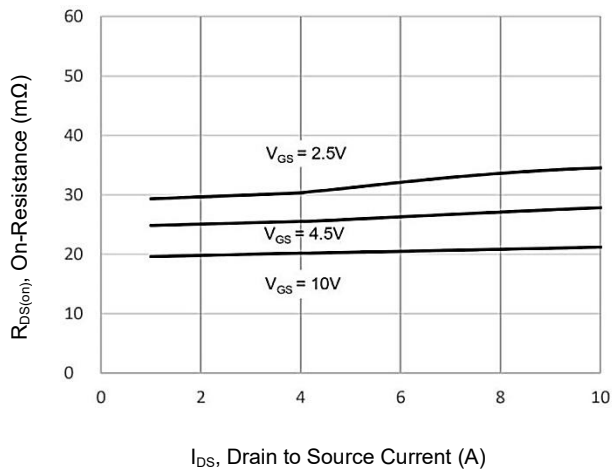
On-Region Characteristic



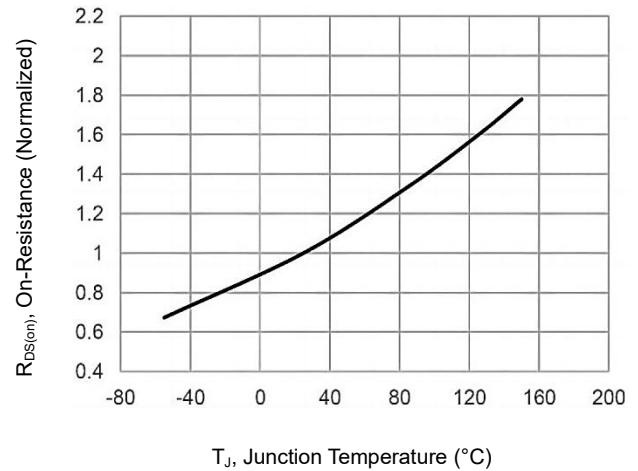
Transfer Characteristics



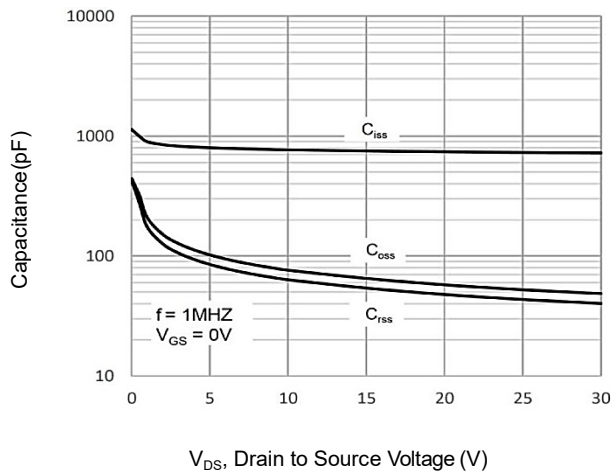
On-Resistance vs. Drain Current



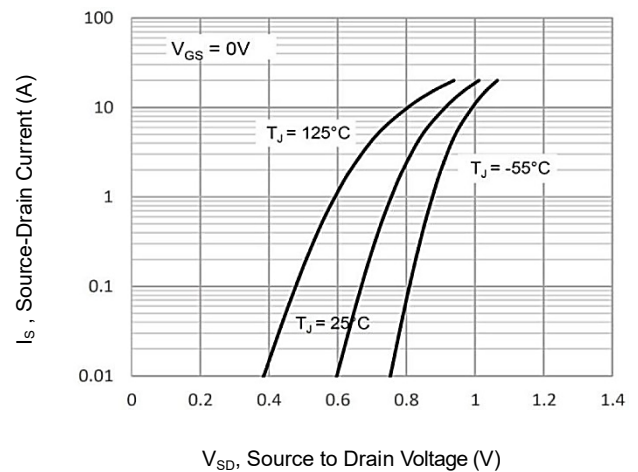
On-Resistance vs. Junction Temperature



Capacitance vs. Drain-Source Voltage



Source-Drain Diode Forward Voltage



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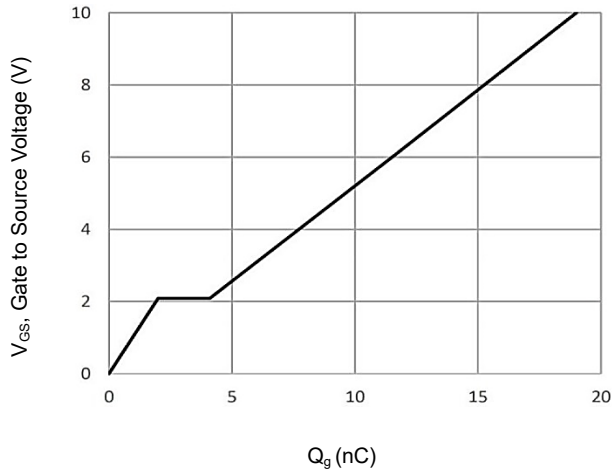
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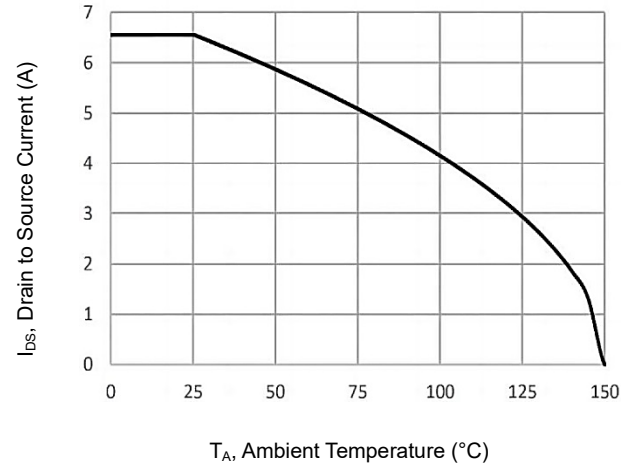
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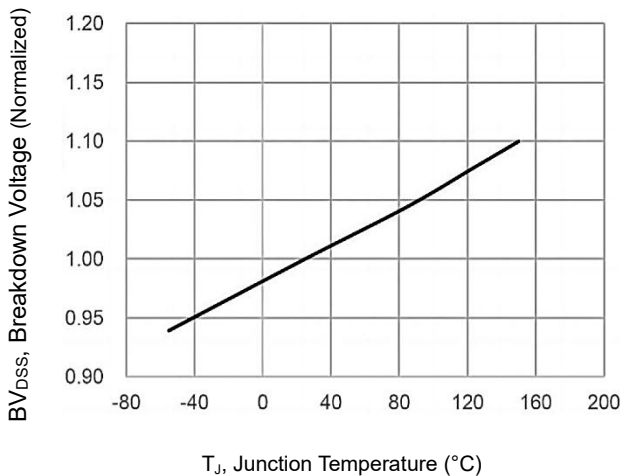
Gate-Charge Characteristics



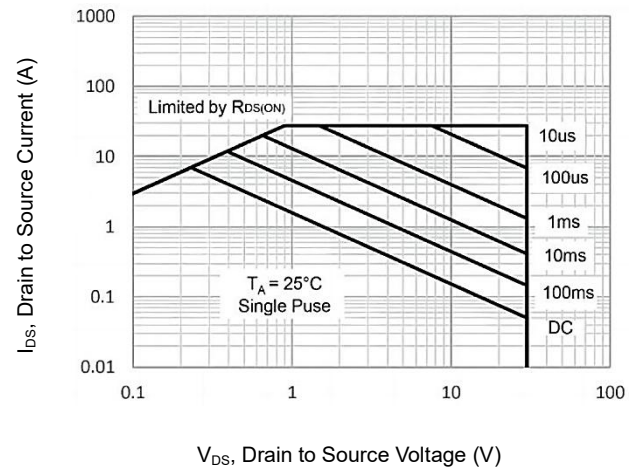
Drain Current



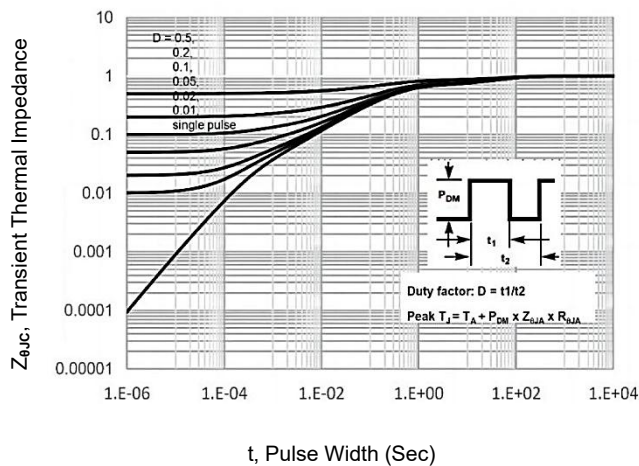
Breakdown Voltage vs Junction Temperature



Maximum Safe Operating Area



Normalized Transient Thermal Impedance



Peak Current Capacity

