

N-Channel MOSFET

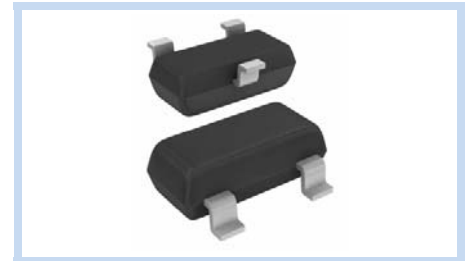
100V 1.3A 1.2W SOT-23

MFT10N1A3S23

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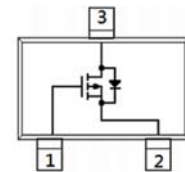
FEATURE

- $R_{DS(ON)} < 320m\Omega$, $V_{GS}=10V$, $I_D=1.3A$
- $R_{DS(ON)} < 330m\Omega$, $V_{GS}=4.5V$, $I_D=0.6A$
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc



MECHANICAL DATA

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

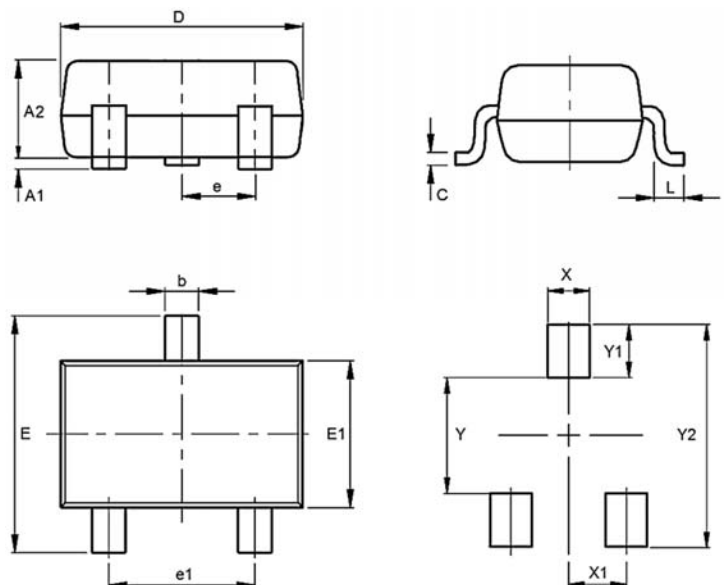


MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current – Continuous	$T_A=25^{\circ}C$	I_D	1.3	A
	$T_A=70^{\circ}C$		1.0	A
Drain Current – Pulsed		I_{DM}	5.2	A
Power Dissipation	$T_A=25^{\circ}C$	P_D	1.2	W
	$T_A=70^{\circ}C$		0.8	W
Operating Junction and Storage Temperature Range		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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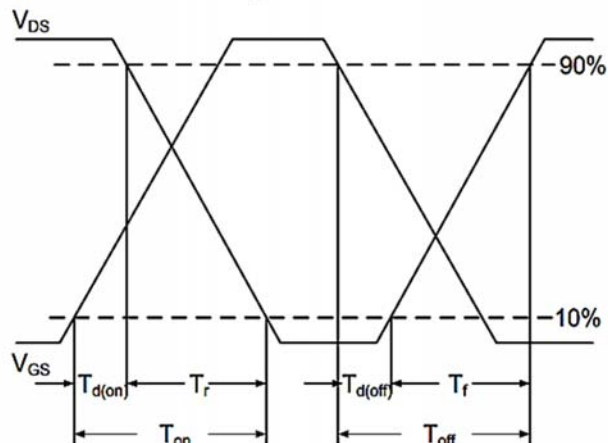
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	100	-	-	V
Zero Gate Voltage Drain Current	$V_{DS}=50V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	I_{GSS}	-	-	± 100	nA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	1.0	2.06	2.5	V
Drain-Source On-Resistance	$V_{GS}=10V, I_D=1.3A$	$R_{DS(on)}$	-	290	320	m Ω
	$V_{GS}=4.5V, I_D=0.6A$		-	295	330	
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=50V, I_D=1.3A$ $V_{GS}=10V,$	Q_g	-	9.1	-	nC
Gate-Source Charge		Q_{gs}	-	2.1	-	
Gate-Drain Charge		Q_{gd}	-	1.4	-	
Input Capacitance	$V_{DS}=30V, V_{GS}=0V,$ $F=1.0MHz$	C_{iss}	-	508	-	pF
Output Capacitance		C_{oss}	-	29	-	
Reverse Transfer Capacitance		C_{rss}	-	18	-	
Turn-On Delay Time	$V_{DD}=50V, I_D=1.3A$ $V_{GS}=10V, R_G=3\Omega$	$T_{d(on)}$	-	2	-	nS
Turn-On Rise Time		T_r	-	21	-	
Turn-Off Delay Time		$T_{d(off)}$	-	12	-	
Turn-Off Fall Time		T_f	-	19	-	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Current	-	I_S	-	-	1.3	A
Diode Forward Voltage	$I_S=500mA, V_{GS}=0V$	V_{SD}	-	0.78	1.2	V

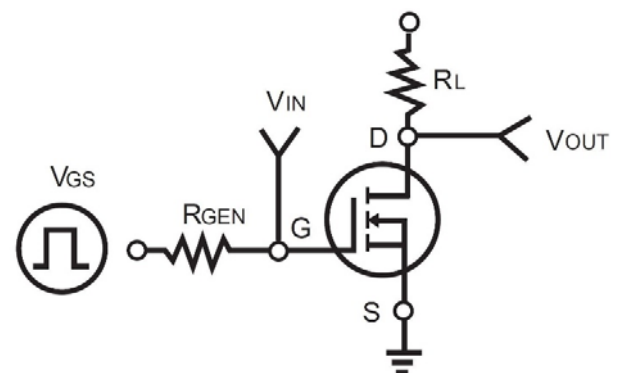
Note:

1. Pulse width $\leq 300\mu s$, duty cycles $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ C$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ C$
4. The maximum current rating is package limited.
5. $R_{\theta JA}$ 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 square pad of copper.
6. Guaranteed by design, not test in mass production

Switching Time Waveform



Switching Test Circuit



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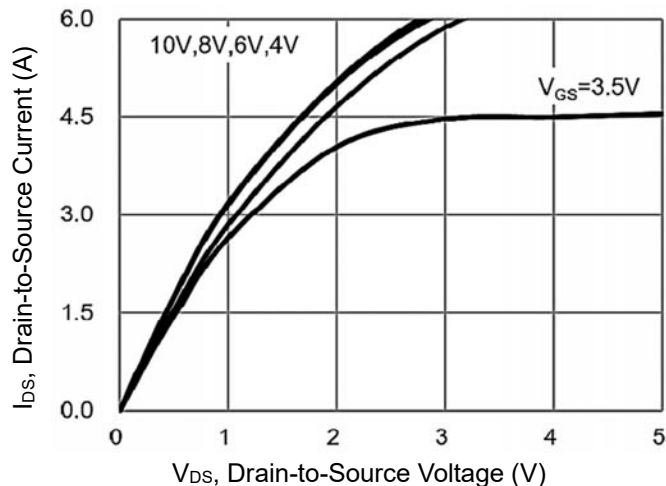
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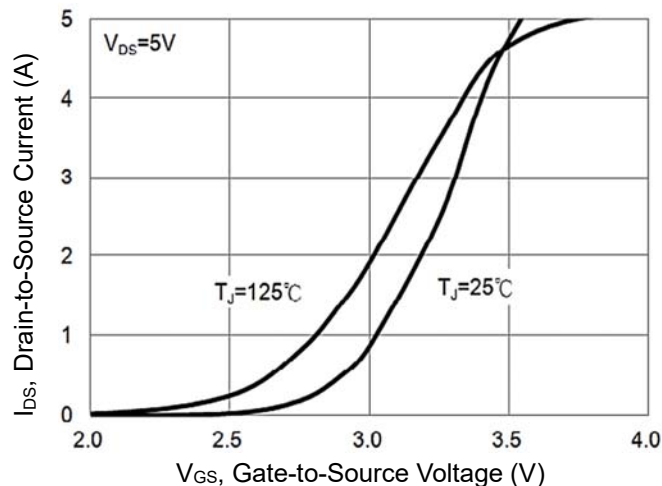
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CHARACTERISTIC CURVES

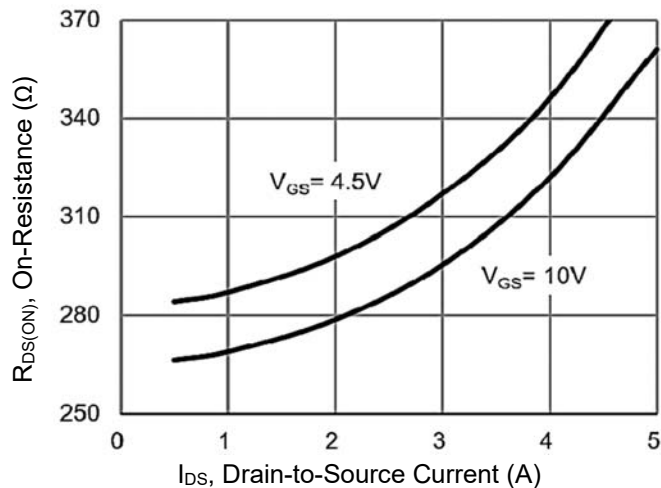
On-Region Characteristics



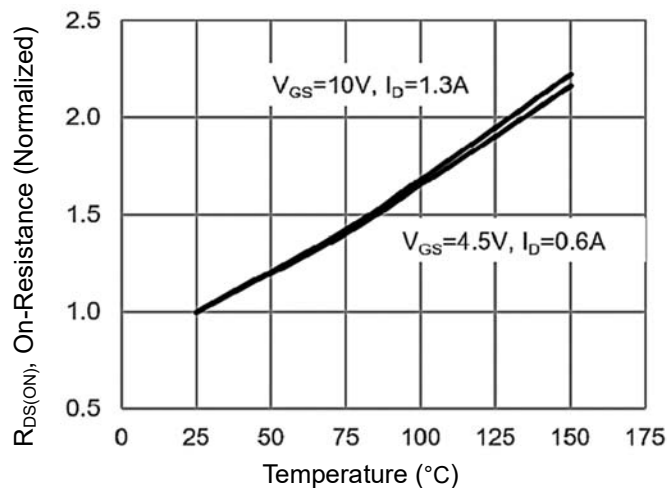
Transfer Characteristics



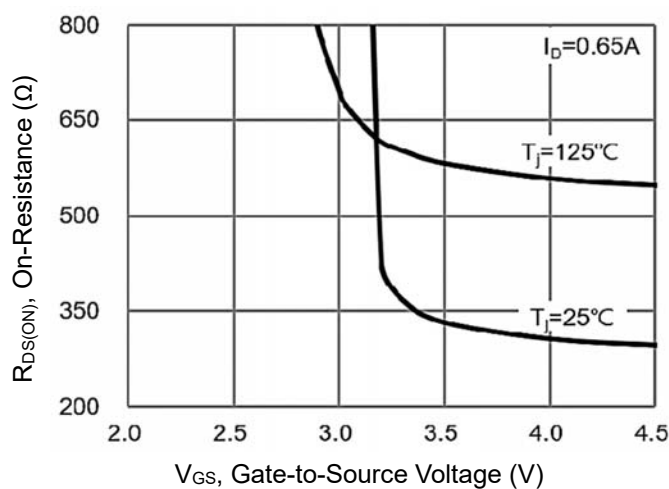
On-Resistance vs. Drain Current



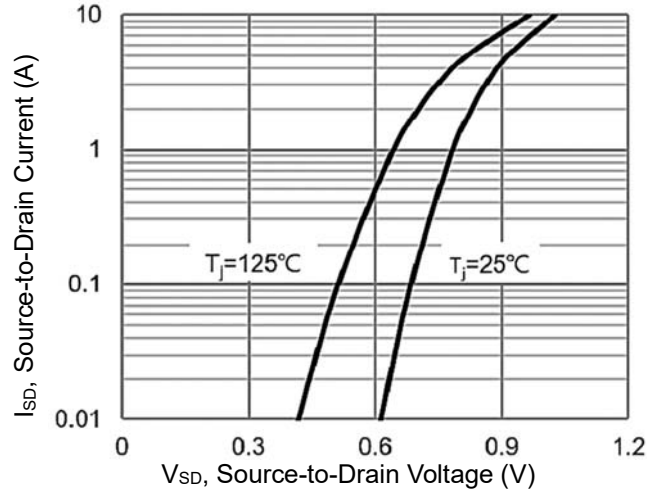
On-Resistance vs. Junction temperature



On-Resistance Variation with VGS



Body Diode Characteristics



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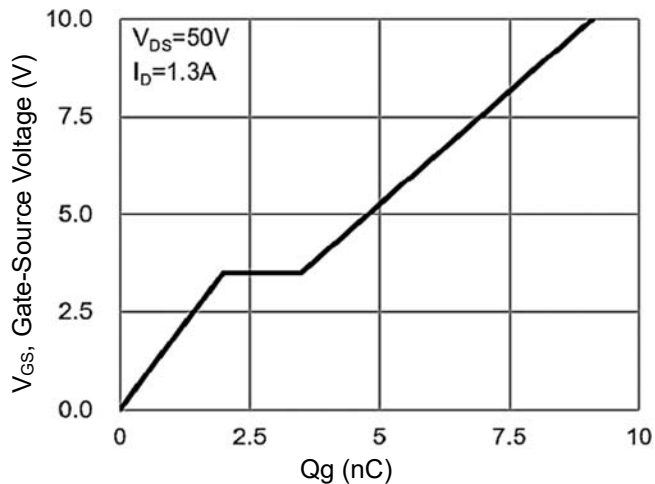
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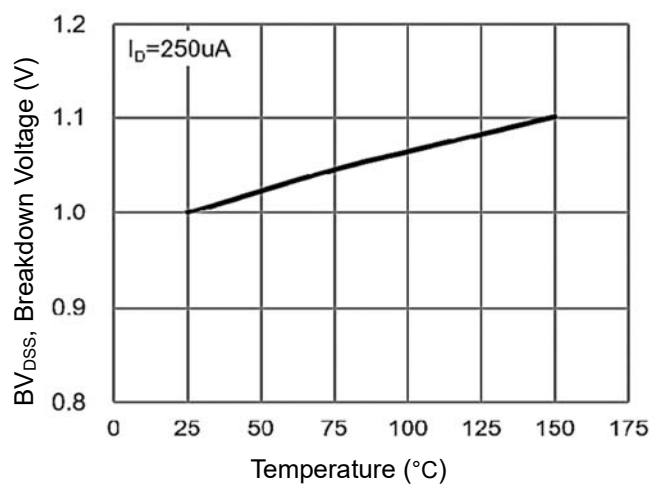
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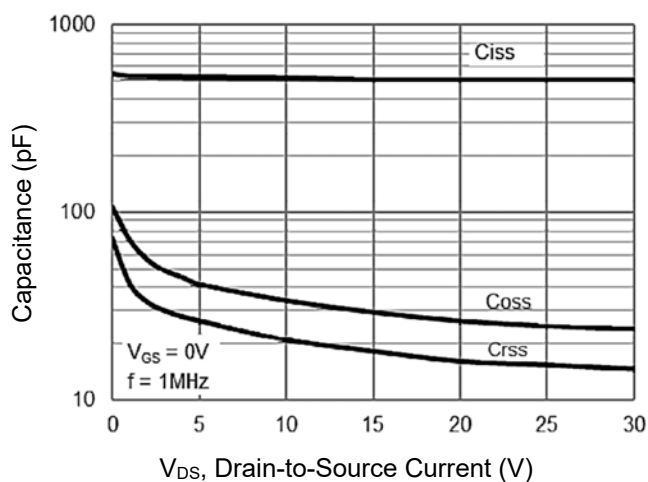
Gate-Charge Characteristics



Breakdown Voltage vs. Temperature



Capacitance vs. Drain-Source Voltage



Threshold Voltage Variation with Temperature

