

P-Channel MOSFET

100V 0.9A SOT-23

MFT10PA90S23

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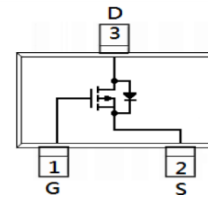
FEATURE

- $R_{DS(ON)} < 650m\Omega$, $V_{GS} = -10V$, $I_D = -0.9V$
- $R_{DS(ON)} < 700m\Omega$, $V_{GS} = -4.5V$, $I_D = -0.4.5V$
- Advanced Trench Process Technology
- Application: Switch Load, PWM Application, etc.



MECHANICAL DATA

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

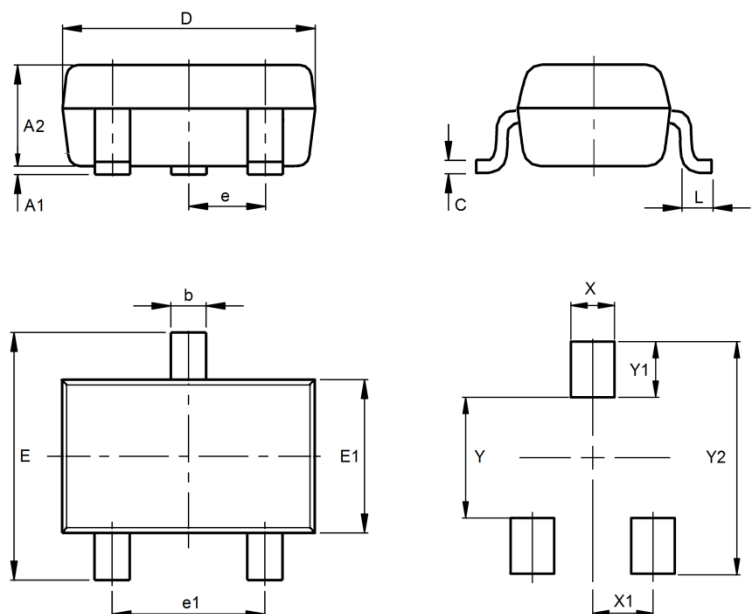


MAXIMUM RATINGS

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	V_{DS}	-100	V	
Gate-Source Voltage	V_{GS}	± 20	V	
Drain Current – Continuous	I_D	$T_A = 25^\circ C$	-0.9	A
		$T_A = 70^\circ C$	-0.75	A
Drain Current – Pulsed	I_{DM}	-3.6	A	
Power Dissipation	P_D	$T_A = 25^\circ C$	1.25	W
		$T_A = 70^\circ C$	0.8	W
Single Pulse Avalanche Energy	E_{AS}	0.2	mJ	
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	100	$^\circ C/W$	
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to 150	$^\circ C$	

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	2.25	2.55
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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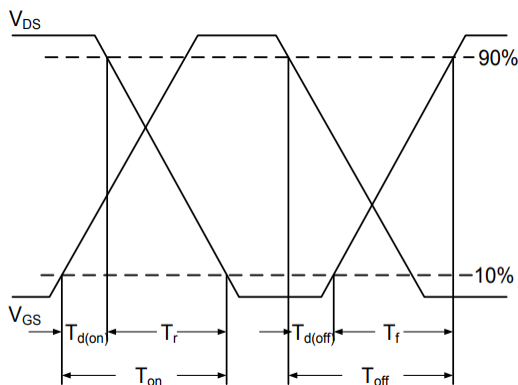
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ELECTRICAL CHARACTERISTICS

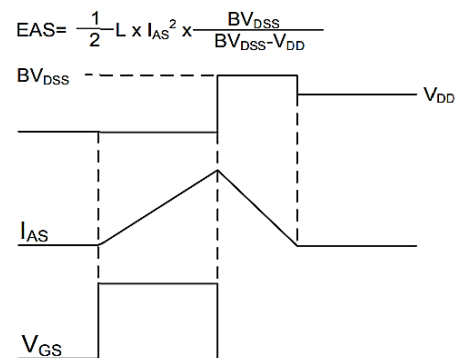
Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-100	--	--	V
Drain-Source Leakage Current	$V_{DS}=-80V, V_{GS}=0V$	I_{DSS}	--	--	-1	μA
Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	--	--	± 100	nA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-0.9A$	$R_{DS(ON)}$	--	500	650	m Ω
	$V_{GS}=4.5V, I_D=-0.45A$		--	560	700	m Ω
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	$V_{GS(th)}$	-1	-2	-2.5	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=-50V, V_{GS}=-10V, I_D=-1A$	Q_g	--	8	--	nC
Gate-Source Charge		Q_{gs}	--	1.8	--	
Gate-Drain Charge		Q_{gd}	--	1.4	--	
Turn-On Delay Time	$V_{DD}=-50V, V_{GS}=-10V, R_G=6.2\Omega, I_D=1A$	$T_{d(on)}$	--	3.7	--	ns
Rise Time		T_r	--	25	--	
Turn-Off Delay Time		$T_{d(off)}$	--	21	--	
Fall Time		T_f	--	22	--	
Input Capacitance	$V_{DS}=-15V, V_{GS}=0V, F=1MHz$	C_{iss}	--	448	--	pF
Output Capacitance		C_{oss}	--	28	--	
Reverse Transfer Capacitance		C_{rss}	--	21	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Continuous Source Current	$V_G=V_D=0V$, Force Current	I_S	--	--	-1.5	A
Diode Forward Voltage	$V_{GS}=0V, I_S=-1.0A$	V_{SD}	--	-0.82	-1.2	V

- Note:
- Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
 - Essentially independent of operating temperature typical characteristics
 - Maximum current rating is package limited
 - Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^\circ C$. Rating are based on low frequency and duty cycle to keep to keep initial $T_J=25^\circ C$
 - The test condition is $L=0.1mH, I_{AS}=-2A, V_{DD}=-25V, V_{GS}=-10V$
 - $R_{\theta JA}$ 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 inch² with 2oz square pad of copper.
 - Guaranteed by design, not subject to production testing.

Switching Time Waveform



EAS Waveform



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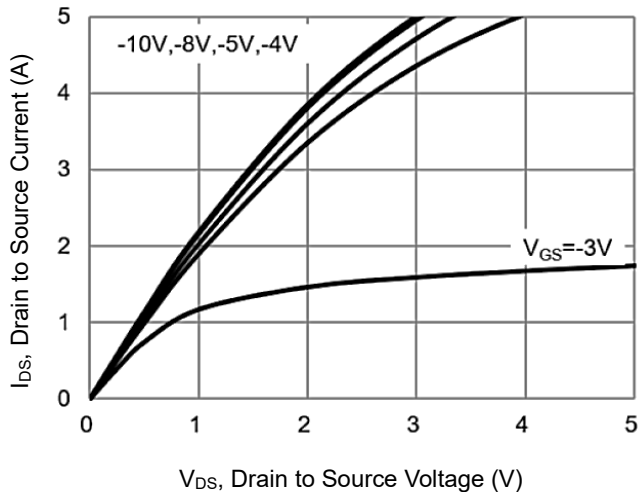
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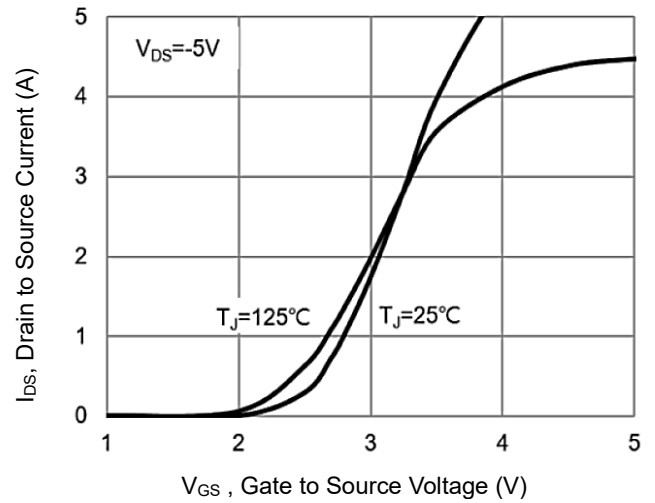
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CHARACTERISTIC CURVES

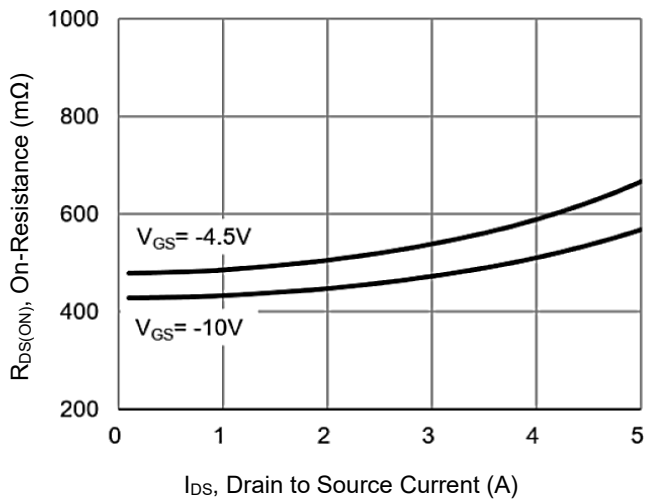
On-Region Characteristics



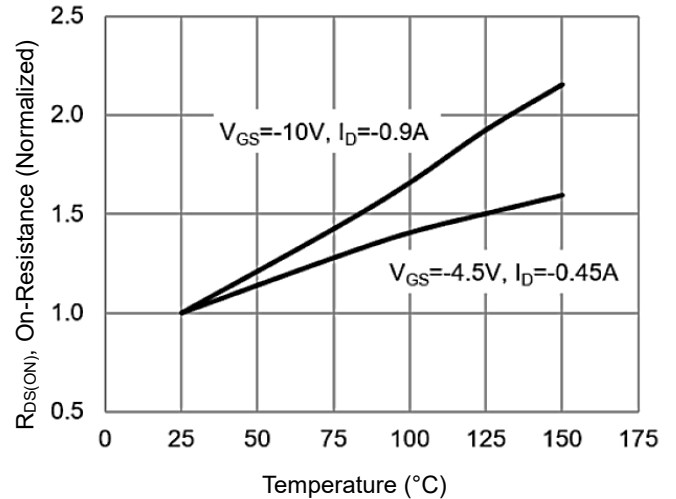
Transfer Characteristics



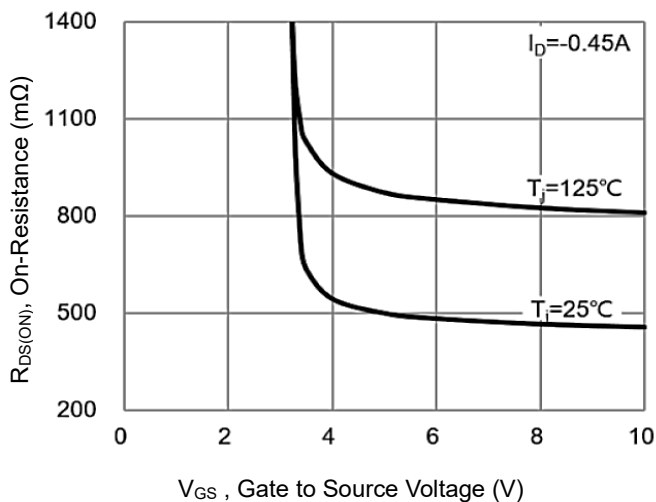
On-Resistance vs. Drain Current



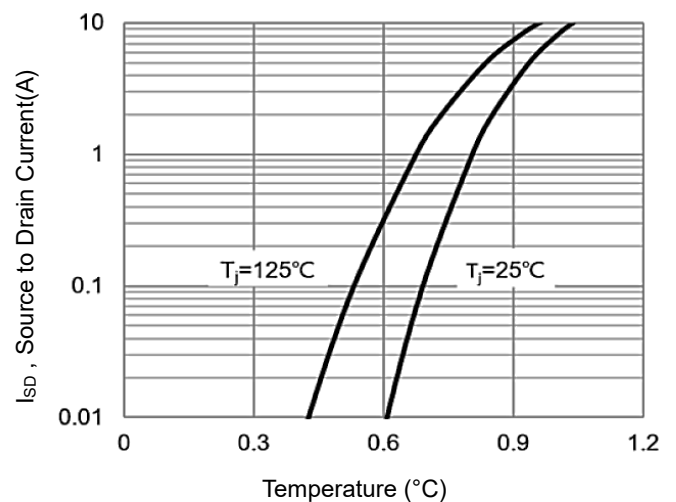
On-Resistance vs. Junction Temperature



On-Resistance Variation with Vgs



Bode Diode Characteristics



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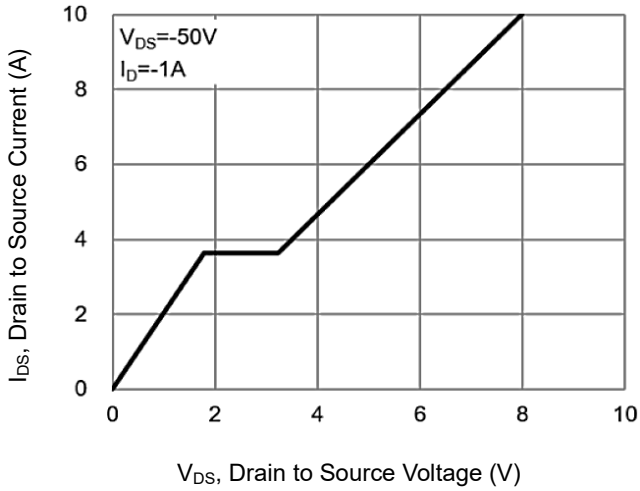
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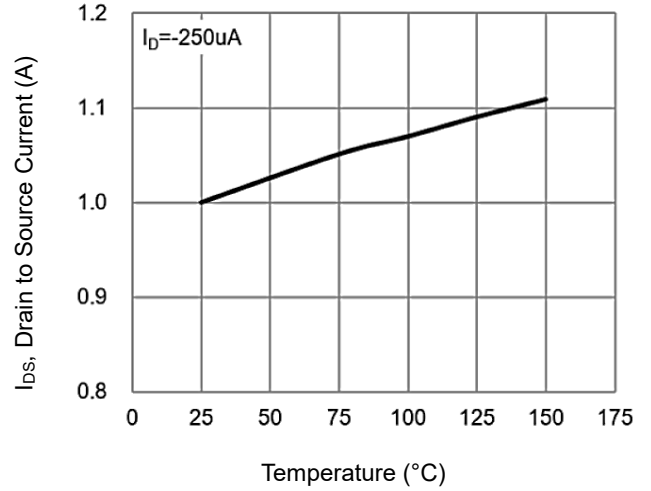
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CHARACTERISTICS CURVES (CONTINUED)

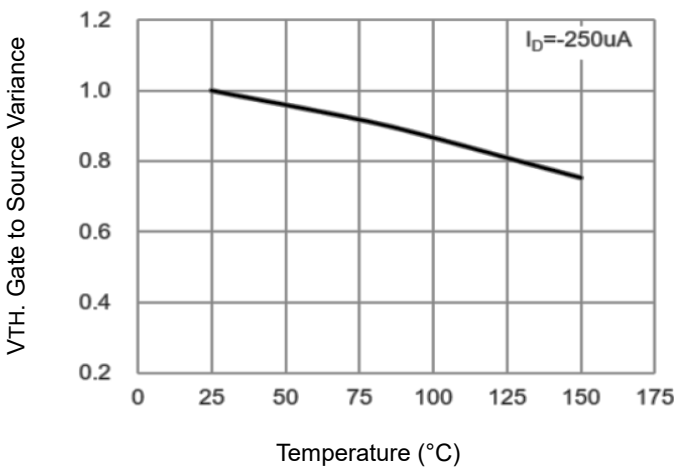
Gate-Charge Characteristics



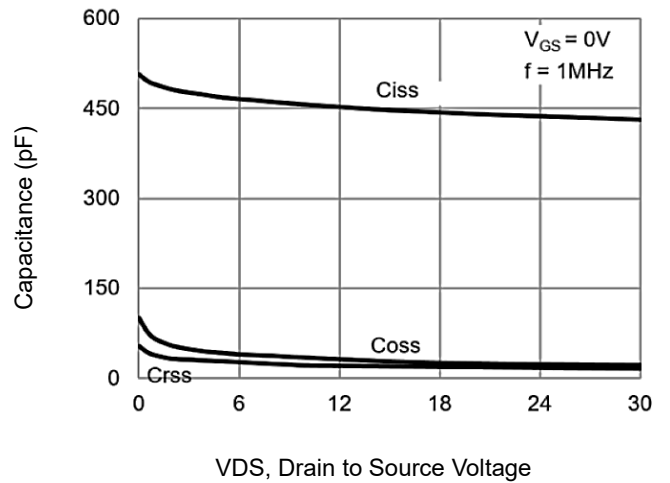
Breakdown Voltage Variation vs. Temperature



Threshold Voltage Variation with Temperature



Capacitance vs. Drain to Source Voltage



*Specifications subject to change without notice.