

N-Channel MOSFET

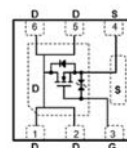
20V 11A 2W DFN2X2-6 ESD

MFT2N11D226E

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FEATURE

- $R_{DS(ON)} < 11m\Omega$, $V_{GS}=4.5V$, $I_D=9.5A$
- $R_{DS(ON)} < 13m\Omega$, $V_{GS}=2.5V$, $I_D=9A$
- $R_{DS(ON)} < 17m\Omega$, $V_{GS}=1.8V$, $I_D=8A$
- Advanced Trench Process Technology
- Application: Relay driver, Speed line drive, etc.
- ESD Protected gate.



MECHANICAL DATA

- Case: DFN2X2-6 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

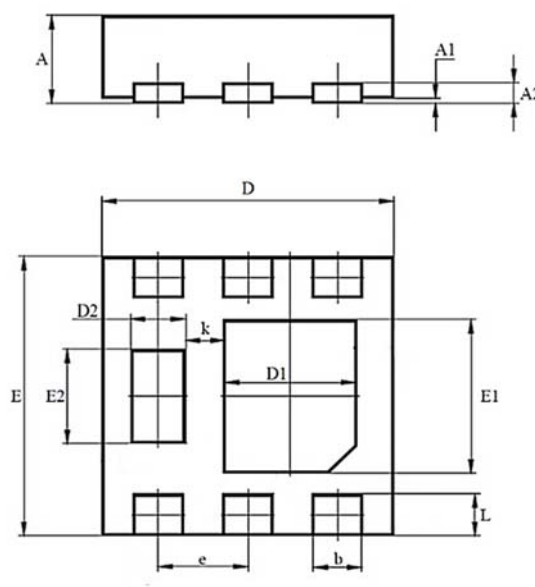
MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current – Continuous	I_D	11	A
Drain Current – Pulsed	I_{DM}	44	A
Power Dissipation	$T_A=25^\circ C$	2	W
	Derate above $25^\circ C$	16	mW/ $^\circ C$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ C / W$

DIMENSIONS

Unit: mm

Item	Min	Max
A	0.700	0.800
A1	0.000	0.050
A2	0.203 BSC	
b	0.250	0.350
D	1.900	2.100
D1	0.850	0.950
D2	0.250	0.350
E	1.900	2.10
E1	0.950	1.050
E2	0.550	0.650
L	0.200	0.300
e	0.650	
k	0.330	0.400



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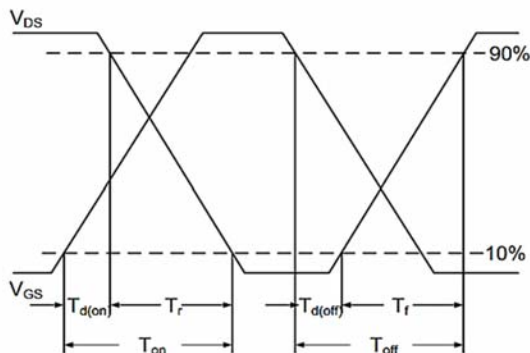
ELECTRICAL CHARACTERISTICS

Off Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	20	--	--	V
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	$V_{GS(th)}$	0.3	0.6	1	V
Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 10V$	I_{GSS}	--	--	± 10	μA
Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	I_{DSS}	--	--	1.0	μA
On Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Static Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=9.5A$	$R_{DS(on)}$	--	9.3	11	m Ω
	$V_{GS}=2.5V, I_D=9A$		--	11	13	
	$V_{GS}=1.8V, I_D=8A$		--	14.5	17	
Dynamic Characteristics	Conditions	Symbol	--	Typ.	Max	Unit
Input Capacitance	$V_{DS}=10V, V_{GS}=0V$ $F=1.0MHz$	C_{iss}	--	1177	--	pF
Output Capacitance		C_{oss}	--	157	--	
Reverse Transfer Capacitance		C_{rss}	--	134	--	
Turn-On Delay Time	$V_{DD}=10V, I_D=1A,$ $V_{GS}=4.5V, R_G=25\Omega$	$T_{d(on)}$	--	16	--	ns
Rise Time		T_r	--	25	--	
Turn-Off Delay Time		$T_{d(off)}$	--	124	--	
Fall Time		T_f	--	101	--	
Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V, I_D=9A$	Q_g	--	16	--	nC
Gate-Source Charge		Q_{gs}	--	1.3	--	
Gate-Drain Charge		Q_{gd}	--	1.6	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Diode Forward Voltage	$I_S=1A, V_{GS}=0V$	V_{SD}	--	0.73	1	V
Diode Continuous Forward Current	--	I_S	--	--	1.5	A

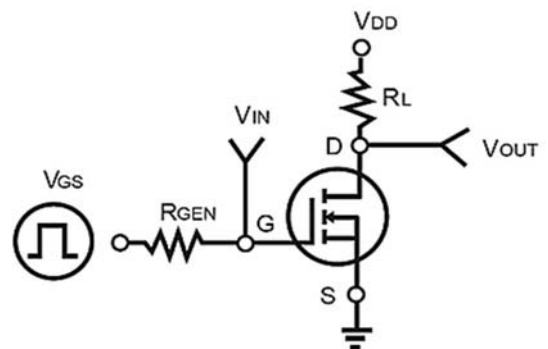
Note:

- $T_A = 25^\circ C$ unless otherwise noted.
- Pulse width $< 300\mu s$, Duty cycle $< 2\%$.
- 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 $T_J=25^\circ C$.
- Essentially independent of operating temperature typical characteristics.
- The maximum current rating is package limited
- Guaranteed by design, not subject to production testing
- $R_{\theta JA}$ 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.

Switching Time Waveform



Switching Test Circuit



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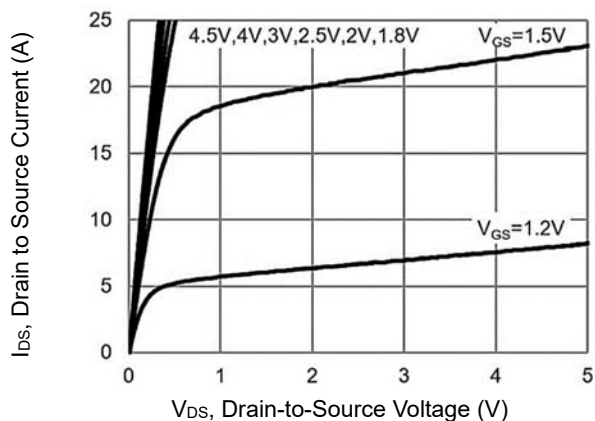
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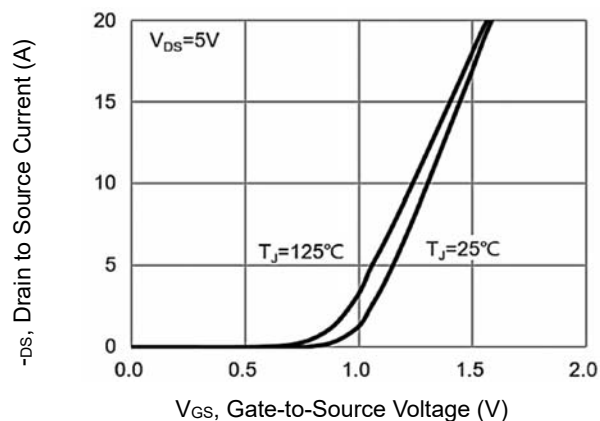
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CHARACTERISTIC CURVES

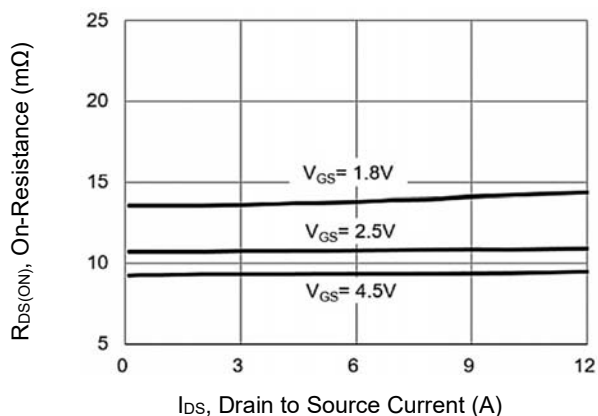
On Region Characteristics



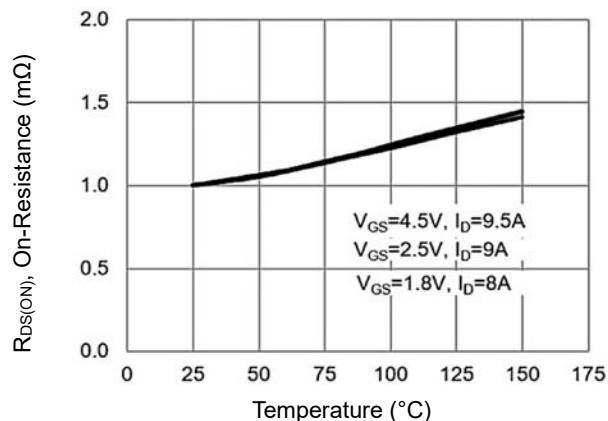
Transfer Characteristics



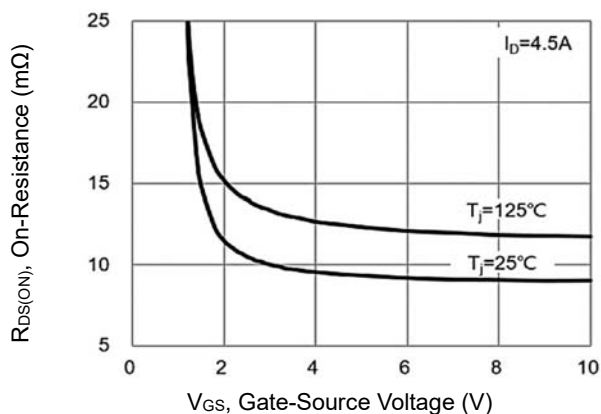
On-Resistance vs. Drain Current



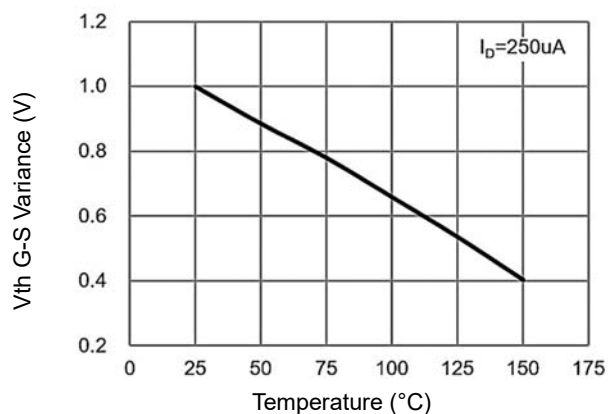
On-Resistance vs. Junction Temperature



On-Resistance Variation with Vgs



Threshold Voltage Variance vs. Temperature



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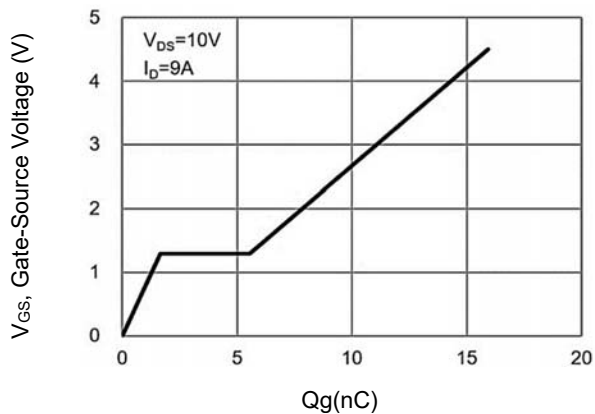
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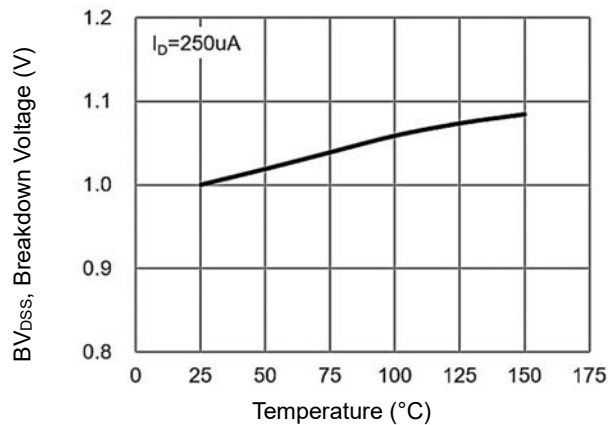
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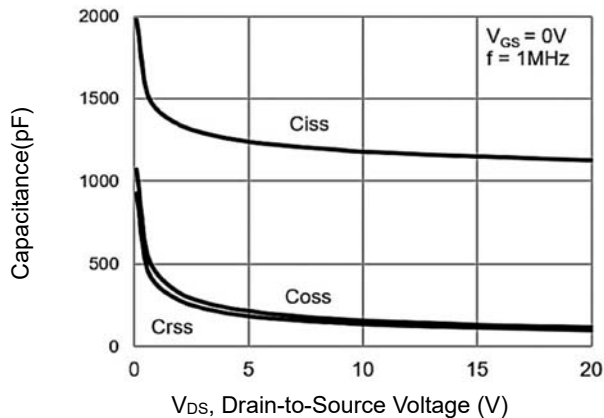
Gate Charge Characteristics



Breakdown Voltage vs Temperature



Capacitance vs. Drain-Source Voltage



Body Diode Characteristics

