

Dual N-Channel MOSFET

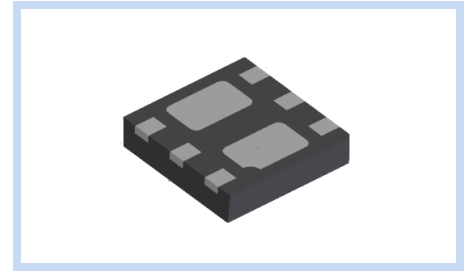
20V 5.2A DFN2020-6L

MFT22N5A2D2020E

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FEATURE

- Operating Temperature: -55 ~ +150 °C
- Low Profile Construction Design
- High power and current handling capability
- ESD Protected
- Application: Load Switch, Power Management Device, Portable Power Adaptors

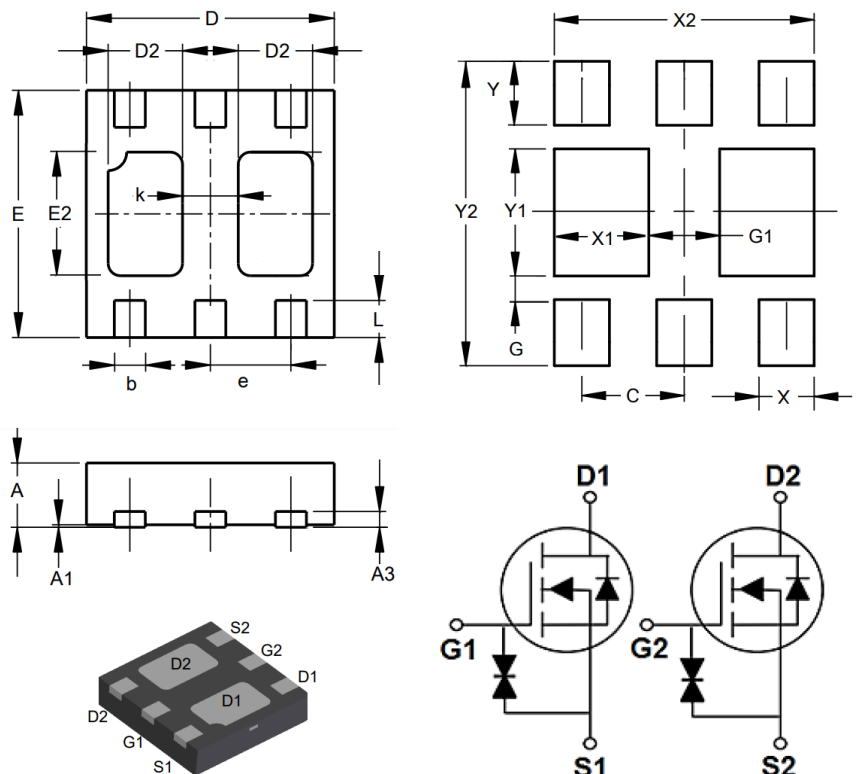


MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Drain Current – Continuous	I_D	5.2	A
Drain Current – Pulsed	I_{DM}	20.8	A
Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	1.45
		Derate above 25°C	11.6
Operating Junction Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	86	$^\circ\text{C/W}$

DIMENSIONS

Item	Min (mm)	Max (mm)
A	0.70	0.80
A1	0.05	0.05
A3	0.70	0.80
b	0.25	0.35
C	0.65	0.65
D	1.95	2.05
D2	0.62	0.72
E	1.95	2.05
E2	0.95	1.05
e	0.65	0.65
X1	0.72	0.72
X2	1.95	2.05
Y	0.325	0.325
Y1	1.05	1.05
G	0.25	0.25
X	0.35	0.35



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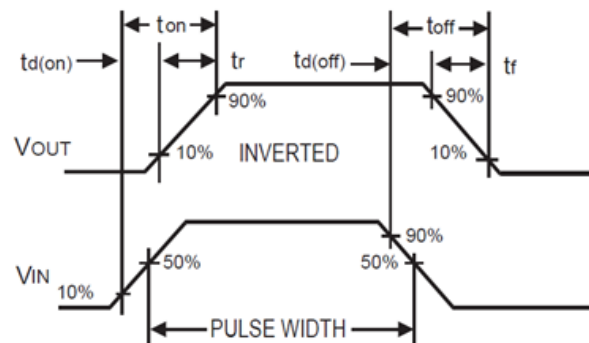
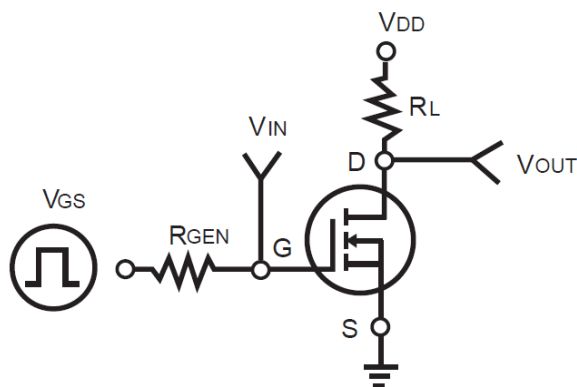
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ELECTRICAL CHARACTERISTICS

Static Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	20	--	--	V
Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	I_{BSS}	--	-0.01	1	μA
Gate Body Leakage Current, Forward	$V_{DS}=0V, V_{GS}=\pm 8V$	I_{GSS}	--	± 3	± 10	μA
Static Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=5.2A$	$R_{DS(ON)}$	--	24	32	m Ω
	$V_{GS}=2.5V, I_D=3.2A$	$R_{DS(ON)}$	--	30	45	m Ω
	$V_{GS}=1.8V, I_D=2.0A$	$R_{DS(ON)}$	--	40	65	m Ω
Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	$V_{GS(th)}$	0.4	0.68	0.9	V
Dynamic Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Input Capacitance	$V_{DS}=10V, V_{GS}=0V, F=1MHz$	C_{iss}	--	515	--	pF
Output Capacitance		C_{oss}	--	60	--	pF
Reverse Transfer Capacitance		C_{rss}	--	47	--	pF
Switching Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V, I_D=5.2A$	Q_g	--	6.3	--	nC
Gate-Source Charge		Q_{gs}	--	1.2	--	
Gate-Drain Charge		Q_{gd}	--	1.0	--	
Turn-On Delay Time	$V_{DD}=10V, V_{GS}=4.5V, R_G=6\Omega, I_D=5.2A$	$T_{d(on)}$	--	7	--	ns
Turn-On Rise Time		T_r	--	43	--	
Turn-Off Delay Time		$T_{d(off)}$	--	170	--	
Turn-Off Fall Time		T_f	--	13	--	
Drain-Source Body Diode	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Diode Forward Current	--	I_S	--	--	1.5	A
Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=1.0A$	V_{SD}	--	0.77	1.2	V

Note:

1. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics
3. $R_{\theta JA}$ is the sum of the junction to case to ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1inch FR-4 with 2oz. square pad of copper.
4. The maximum current rating is package limited.



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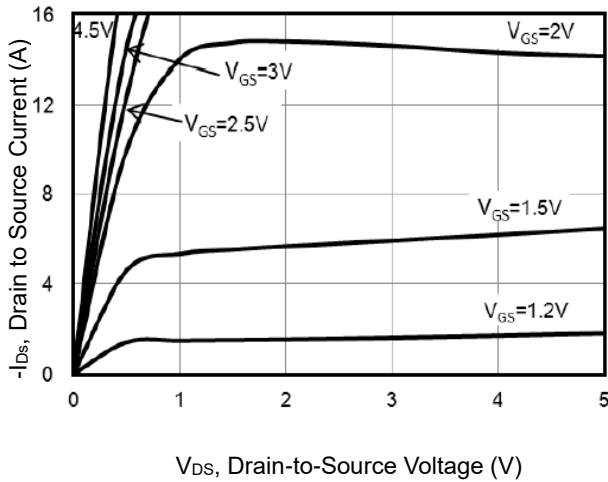
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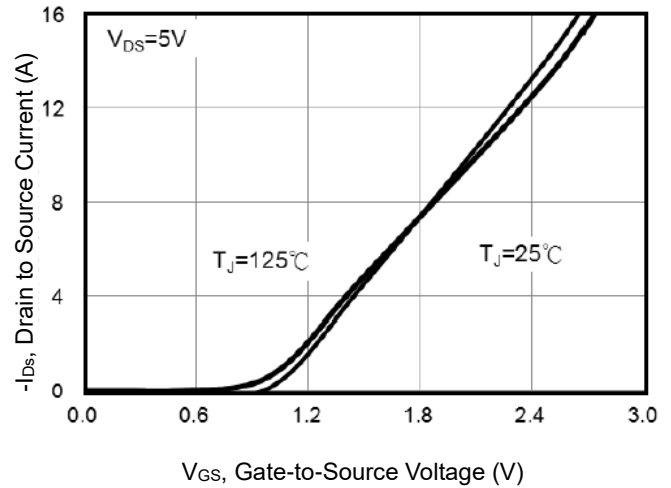
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CHARACTERISTIC CURVES

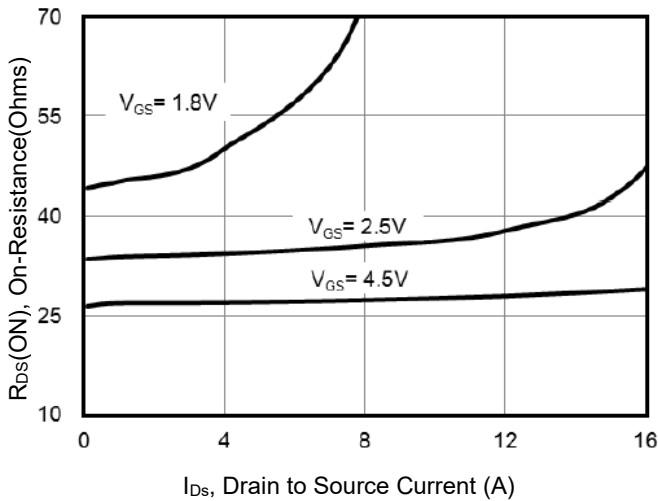
Typical Characteristics



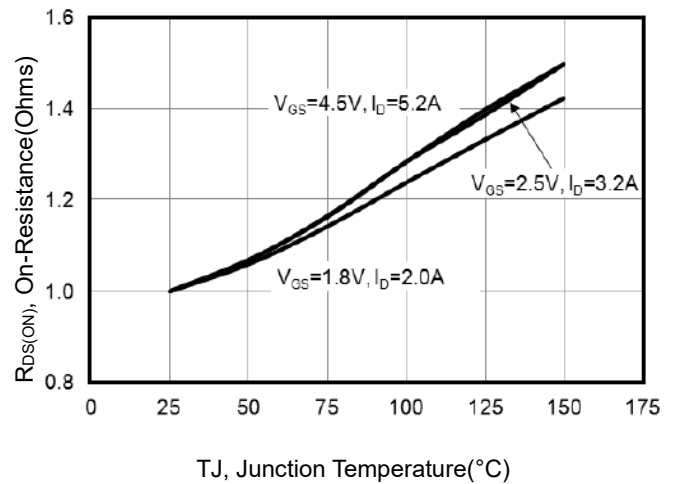
Transfer Characteristics



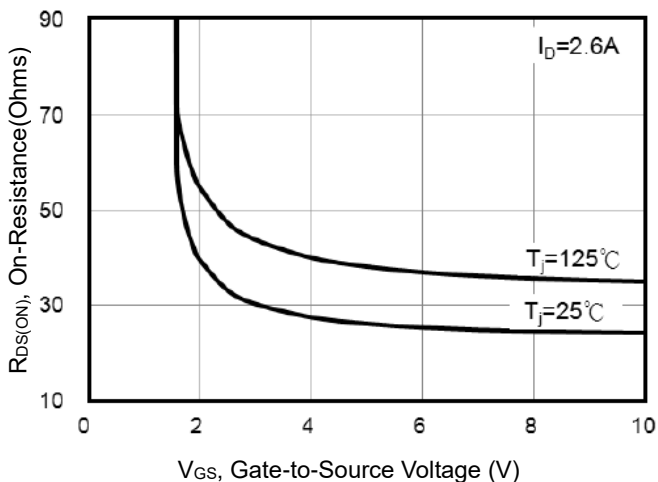
On-Resistance Variation vs. Drain Current



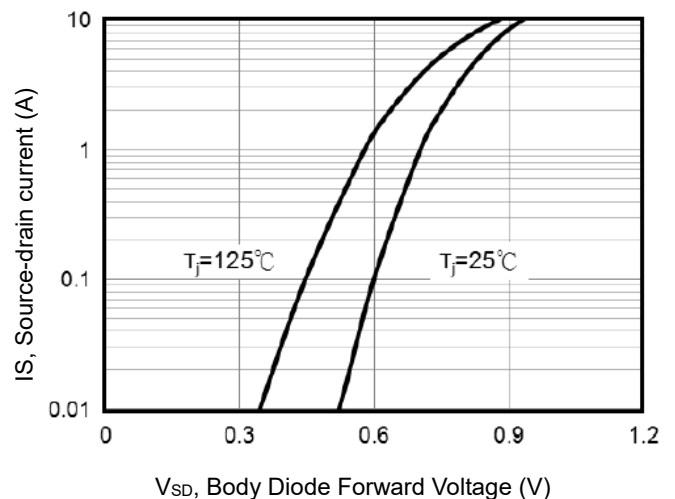
On-Resistance Variation vs. Temperature



On-Resistance Variation vs. VGS



Body Diode Characteristics



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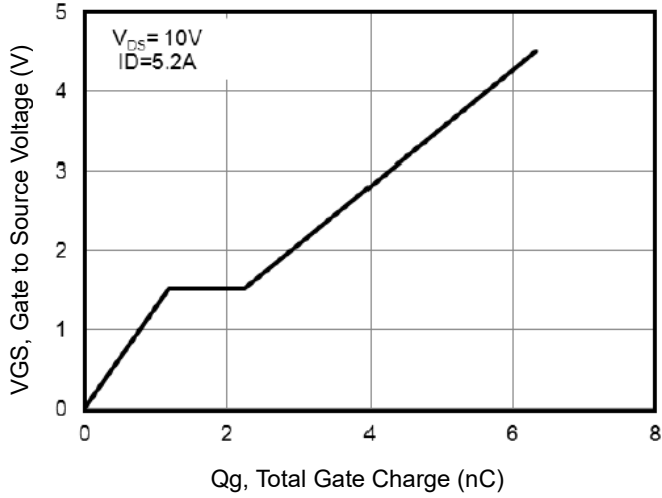
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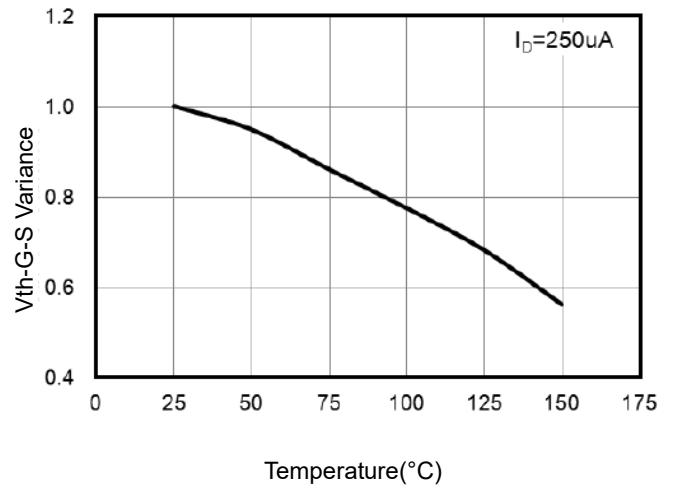
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CHARACTERISTICS CURVES (CONTINUED)

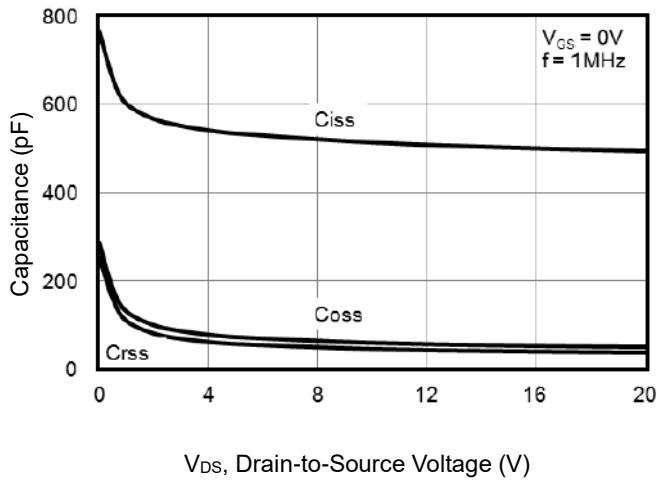
Gate Charge Characteristics



Threshold Voltage Variation with Temperature



Capacitance vs. Drain Source Voltage



*Specifications subject to change without notice.