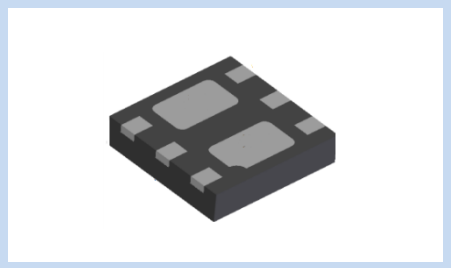
Dual P-Channel MOSFET
-20V -4.2A DFN2020-6L

MFT22P4A2D2020E

MERITEK

FEATURE

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



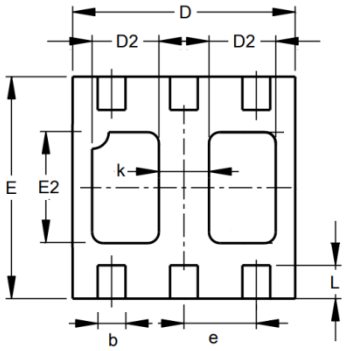
RoHS

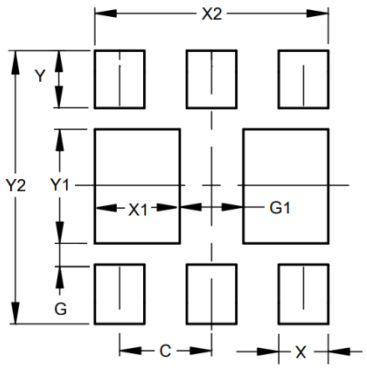
MAXIMUM RATINGS

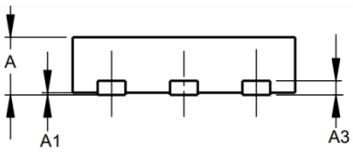
Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Drain Current – Continuous		I_D	-4.2	A
Drain Current – Pulsed		I_{DM}	-16.8	A
Power Dissipation	T_C= 25°C	P_D	1.5	W
	Derate above 25°C		12	mW/°C
Operating Junction Temperature Range		T_J,T_{stg}	-55 to 150	°C
Thermal Resistance, Junction-to-Ambient		$R_{\theta JA}$	86	°C/W

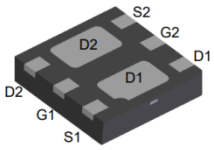
DIMENSIONS

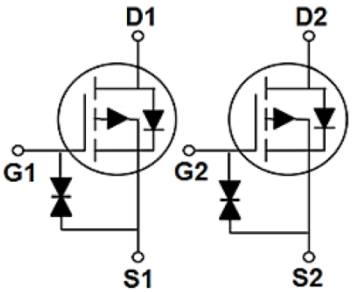
Item	Min (mm)	Max (mm)
A	0.70	0.80
A1	0.05	0.05
A3	0.70	0.80
b	0.25	0.35
C	0.65	0.65
D	1.95	2.05
D2	0.62	0.72
E	1.95	2.05
E2	0.95	1.05
e	0.65	0.65
X1	0.72	0.72
X2	1.95	2.05
Y	0.325	0.325
Y1	1.05	1.05
G	0.25	0.25
X	0.35	0.35







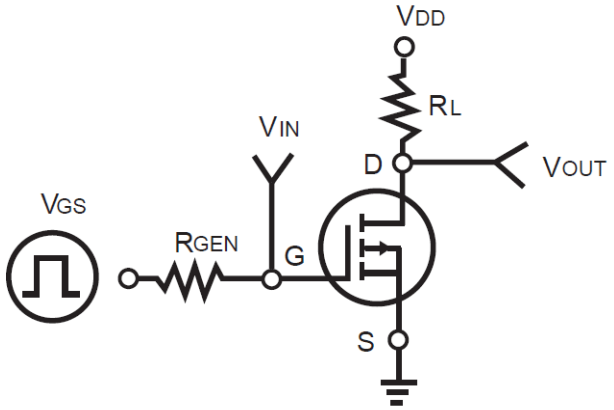


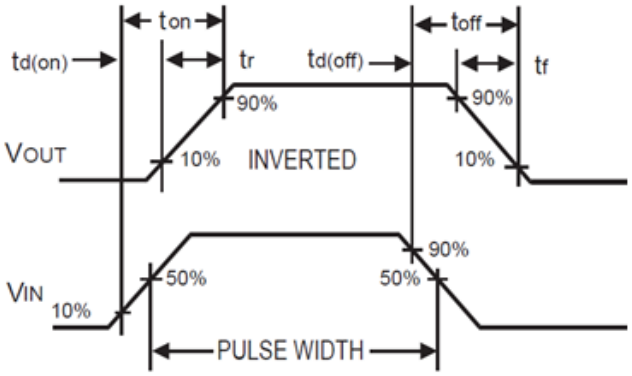


ELECTRICAL CHARACTERISTICS

Static Characteristics	Conditions	Symbol	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	BV_{DSS}	-20	--	--	V
Zero Gate Voltage Drain Current	V_{DS}=-20V, V_{GS}=0V	I_{DSS}	--	-0.01	-1.0	μA
Gate Body Leakage Current, Forward	V_{DS}=0V, V_{GS}=±8V	I_{GSS}	--	±6	±10	μA
Static Drain-Source On-Resistance	V_{GS}=-4.5V, I_D=-4.2A	$R_{DS(ON)}$	--	43	52	mΩ
	V_{GS}=-2.5V, I_D=-3.3A	$R_{DS(ON)}$	--	51	62	mΩ
	V_{GS}=-1.8V, I_D=-2.2A	$R_{DS(ON)}$	--	61	73	mΩ
Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=-250μA	$V_{GS(th)}$	-0.35	-0.55	-0.9	V
Dynamic Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Input Capacitance	V_{DS}=-10V, V_{GS}=0V, F=1MHz	C_{iss}	--	917	--	pF
Output Capacitance		C_{oss}	--	90	--	pF
Reverse Transfer Capacitance		C_{rss}	--	70	--	pF
Switching Characteristics	**Conditions**	**Symbol**	**Min**	**Typ.**	**Max**	**Unit**
Total Gate Charge	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-4.2A	Q_g	--	24	--	nC
Gate-Source Charge		Q_{gs}	--	1.5	--	
Gate-Drain Charge		Q_{gd}	--	2.5		
Turn-On Delay Time	V_{DD}=-10V, V_{GS}=-4.5V, R_G=6Ω I_D=-4.2A	$T_{d(on)}$	--	45	--	ns
Turn-On Rise Time		T_r	--	79	--	
Turn-Off Delay Time		$T_{d(off)}$	--	193	--	
Turn-Off Fall Time		T_f	--	826	--	
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}	--	-0.66	-1.2	V

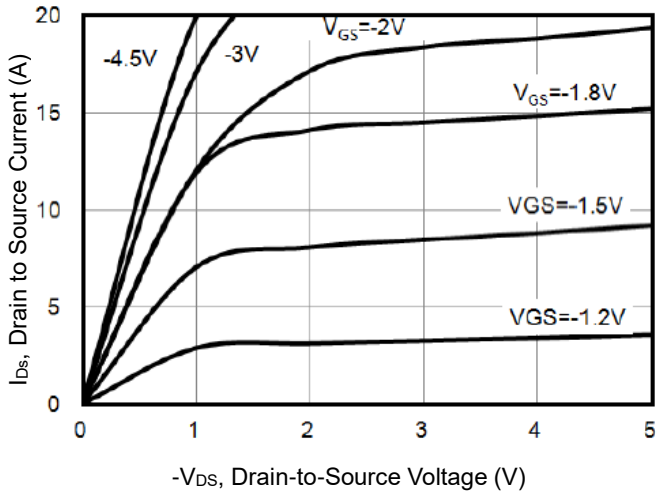
Note:
1. Pulse width ≤ 300μs, duty cycle ≤2%.
2. Essentially independent of operating temperature typical characteristics.
3. RθJA is the sum of the junction to case to ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1inch FR-4 with 2oz. square pad of copper.
4. Repetitive rating, pulse width limited by junction temperature TJ (MAX) =150C.Rating are based on low frequency and duty cycles to keep initial TJ=25C.
4. The maximum current rating is package limited.
5. Guaranteed by design, not subject to production testing.



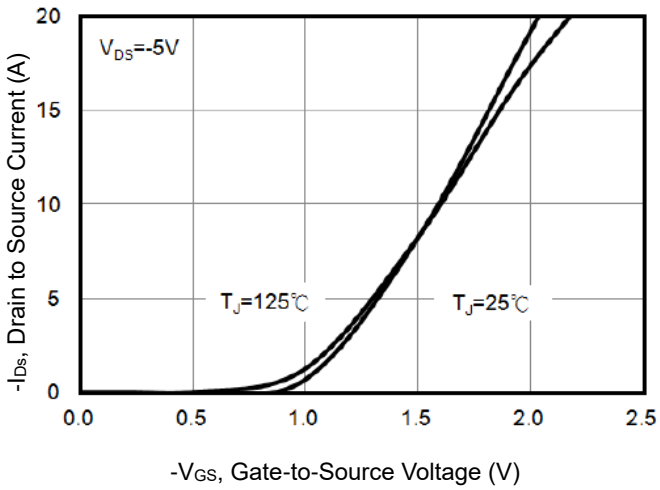


CHARACTERISTIC CURVES

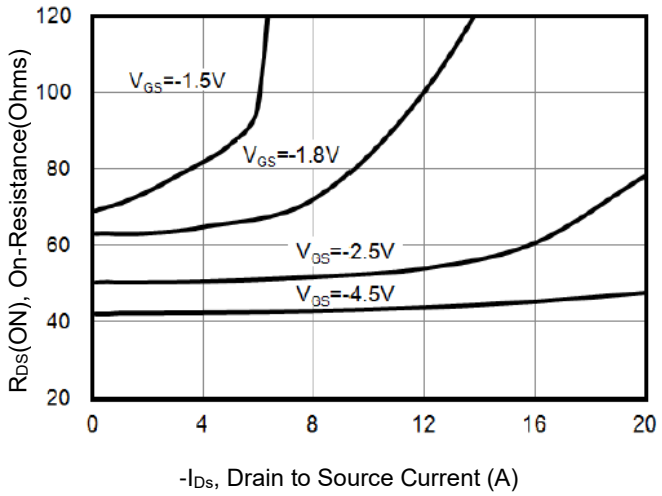
Typical Characteristics



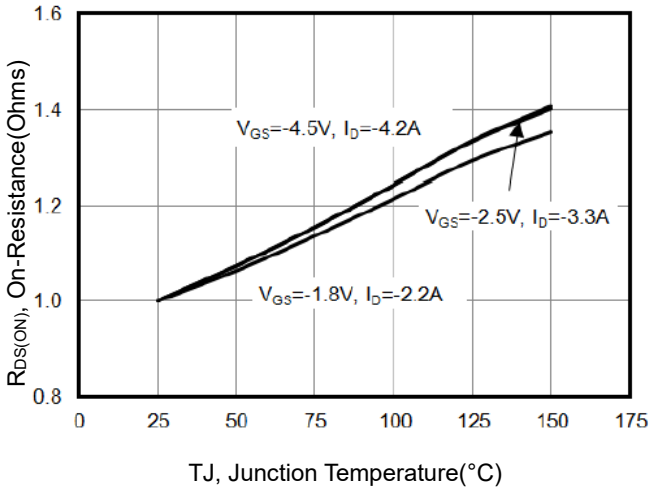
Transfer Characteristics



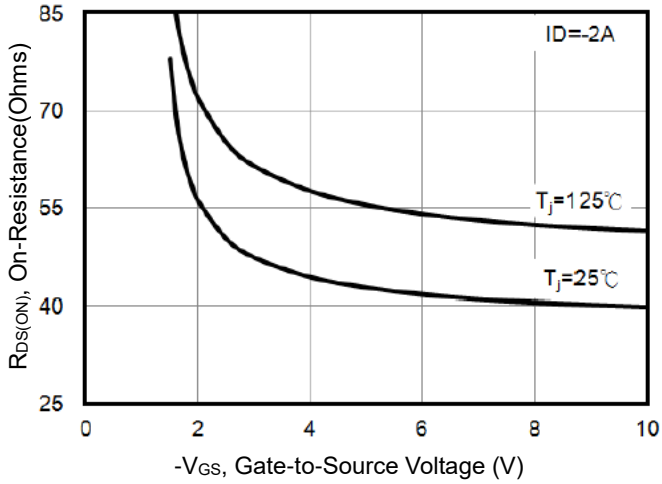
On-Resistance Variation vs. Drain Current



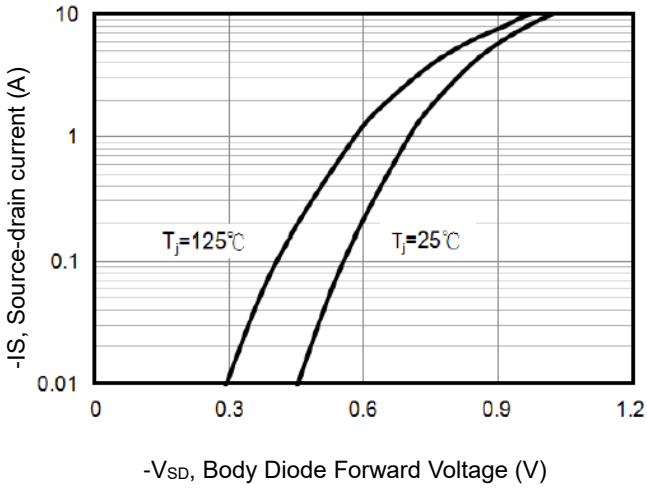
On-Resistance Variation vs. Temperature



On-Resistance Variation vs. V_{GS}

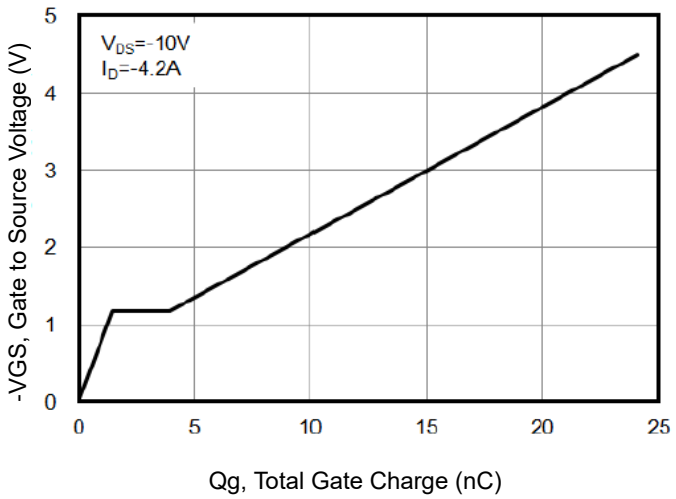


Body Diode Characteristics

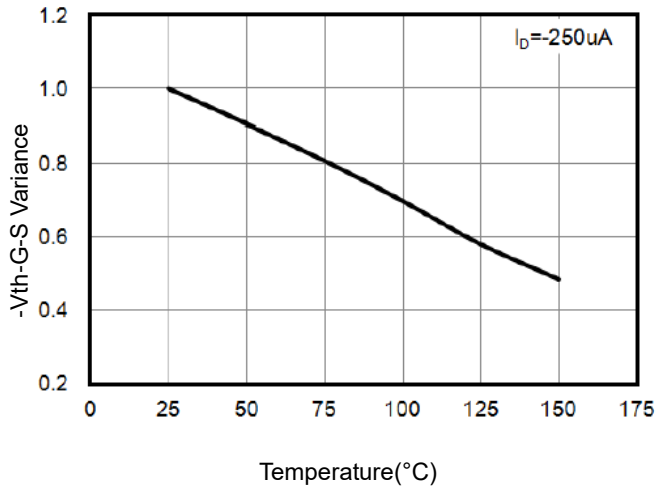


CHARACTERISTICS CURVES (CONTINUED)

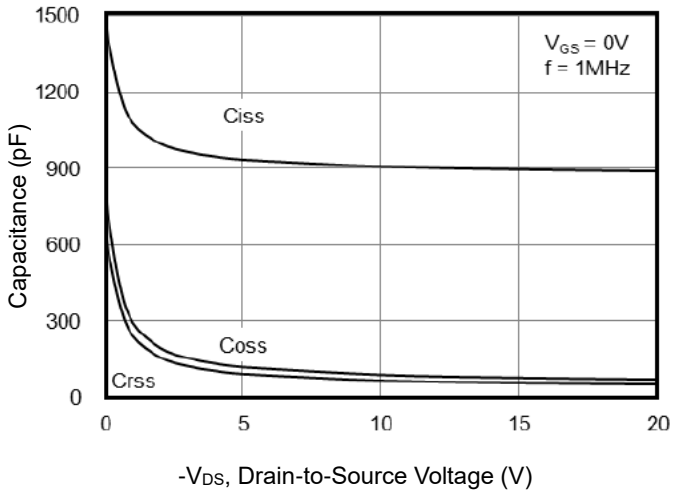
Gate Charge Characteristics



Threshold Voltage Variation with Temperature



Capacitance vs. Drain Source Voltage



*Specifications subject to change without notice.