

Features

- Trench Power LV MOSFET technology
- High Density Cell Design Low $R_{DS(on)}$
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

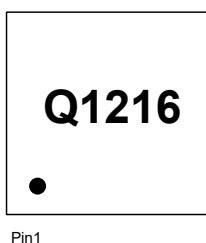
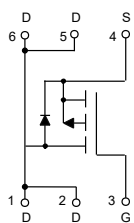
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 60°C/W Junction to Ambient (Note2)
- Thermal Resistance: 6.9°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	A
		$T_C=70^\circ\text{C}$	
Pulsed Drain Current (Note3)	I_{DM}	-64	A
Total Power Dissipation (Note4)	P_D	18	W

Note:

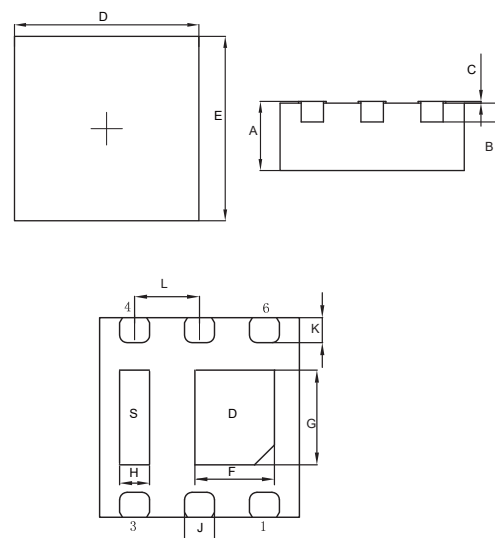
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-case thermal resistance.

Internal Structure and Marking Code



P-CHANNEL MOSFET

DFN2020-6JA



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.030	0.034	0.750	0.850	
B	0.006		0.150		REF.
C	0.000	0.002	0.000	0.050	
D	0.077	0.081	1.950	2.050	
E	0.077	0.081	1.950	2.050	
F	0.024	0.031	0.610	0.810	
G	0.028	0.036	0.710	0.910	
H	0.008	0.016	0.200	0.400	
J	0.010	0.014	0.250	0.350	
K	0.008	0.012	0.200	0.300	
L	0.026		0.650		TYP.

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-20			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±10V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-0.6	-1	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-10A		12	16	mΩ
		V _{GS} =-2.5V, I _D =-6.5A		14	21	
		V _{GS} =-1.8V, I _D =-4A		22	30	
Gate Resistance	R _g	f=1MHz, Open drain		13		Ω
Diode Characteristics						
Diode Forward Voltage	I _S				-16	A
Continuous Body Diode Current	V _{SD}	V _{GS} =0V, I _S =-13A			-1.2	v
Reverse Recovery Chrage	t _{rr}	I _S =-8A, dI _F /dt=100A/μs		102		ns
Reverse Recovery Time	Q _{rr}			158		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-10V,V _{GS} =0V,f=1MHz		2130		pF
Output Capacitance	C _{oss}			290		
Reverse Transfer Capacitance	C _{rss}			262		
Total Gate Charge	Q _g	V _{DS} =-15V,V _{GS} =-10V,I _D =-9.1A		54		nC
Gate-Source Charge	Q _{gs}			3		
Gate-Drain Charge	Q _{gd}			8		
Turn-On Delay Time	t _{d(on)}	V _{GS} =-10V, V _{DD} =-15V, I _D =-6A,R _G =2.5Ω		6		ns
Turn-On Rise Time	t _r			5		
Turn-Off Delay Time	t _{d(off)}			263		
Turn-Off Fall Time	t _f			102		

Curve Characteristics

Fig.1 - Typical Output Characteristics

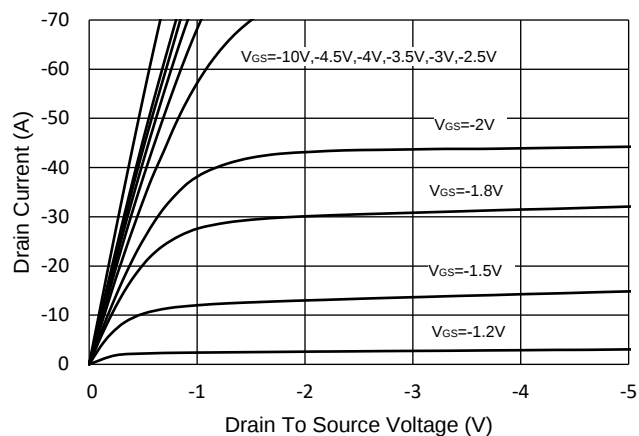


Fig.2 - Transfer Characteristic

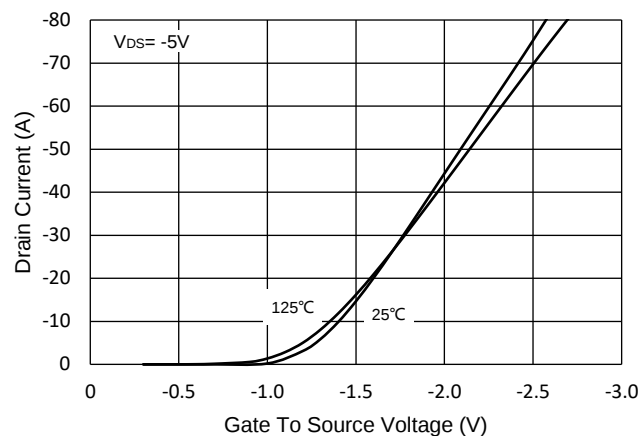


Fig.3 - $R_{DS(ON)}$ - V_{GS}

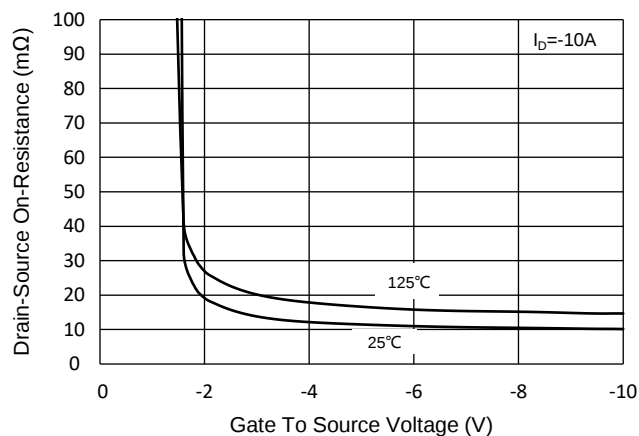


Fig.4 - $R_{DS(ON)}$ - I_D

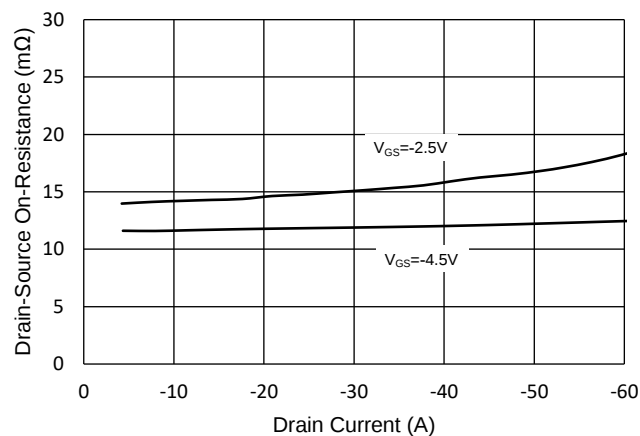


Fig.5 - Capacitance Characteristics

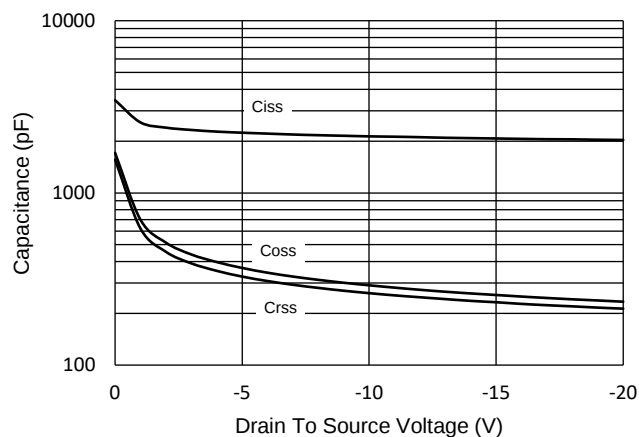
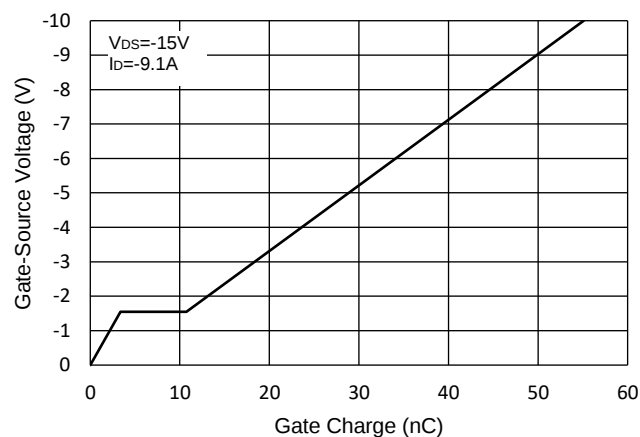


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

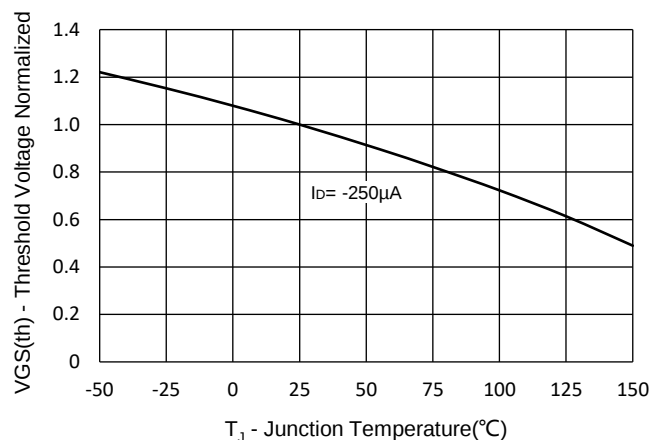


Fig.8 - Normalized On Resistance Characteristics

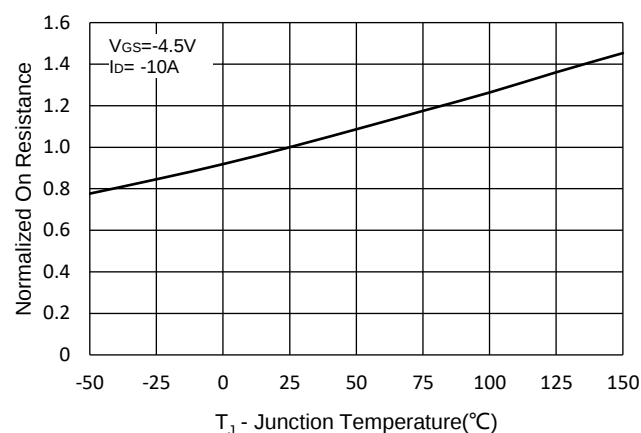


Fig.9 - I_S - V_{SD}

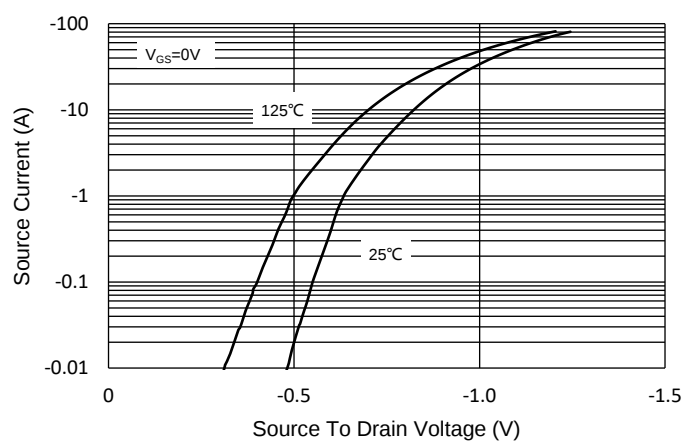


Fig.10 - Drain Current

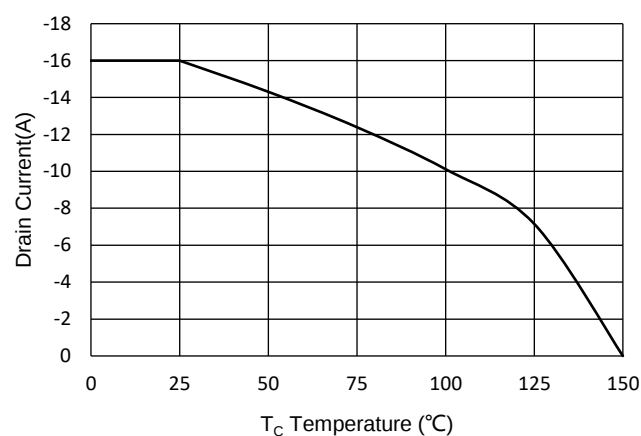
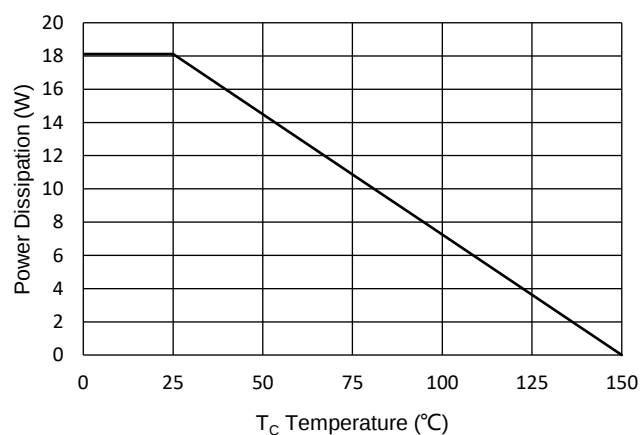


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

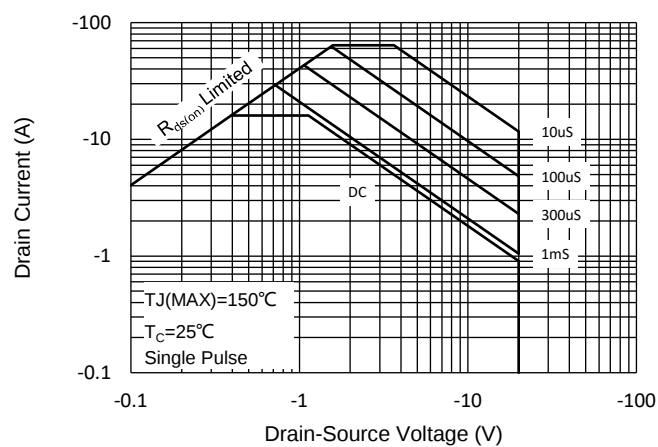
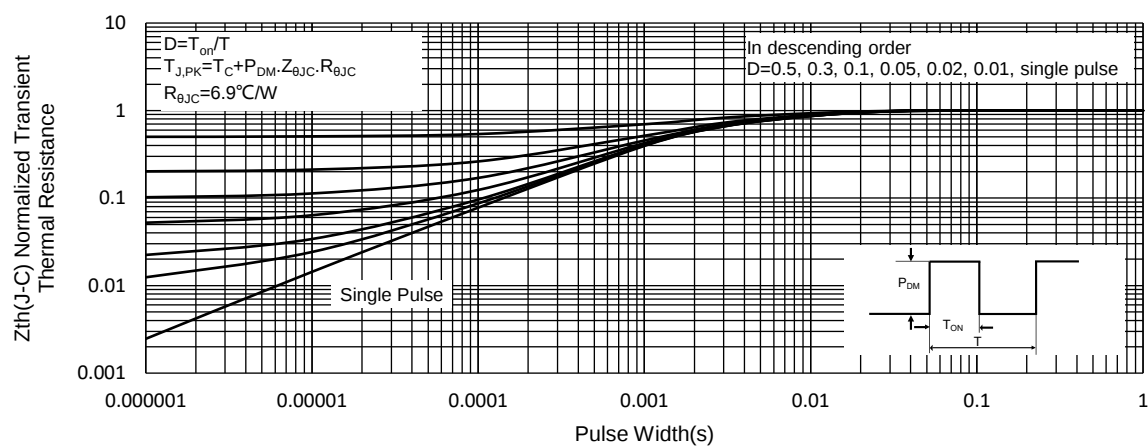


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:3Kpcs/Reel
Part Number-13P	Tape&Reel:10Kpcs/Reel

For packaging details, go to our website at <https://www.mccsemi.com/pdf/productpackaging/DFN2020-6JA%20Package.pdf>

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