N-CHANNEL MOSFET

Features

- AEC-Q101 Qualified
- Trench LV MOSFET Technology
- Moisture Sensitivity Level 3
- Halogen Free."Green"Device(Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

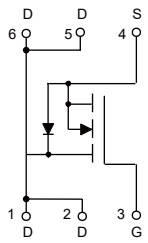
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Typical Thermal Resistance: 52.5°C/W Junction to Ambient(Note2)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	12	V
Gate-Source Volltage		V_{GS}	±8	V
Continuous Drain Current	T_A=25°C	I_D	15	A
	T_A=100°C		9.5	
Pulsed Drain Current(Note 3)		I_{DM}	60	A
Total Power Dissipation(Note 4)		P_D	2.4	W
Single Pulse Avalanche Energy (Note 5)		E_{AS}	36	mJ

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 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-ambient thermal resistance.
5. T_J=25°C, V_{DD}=15V, V_{GS}=10V, R_G=25Ω, L=0.5mH.

Internal Structure and Marking Code

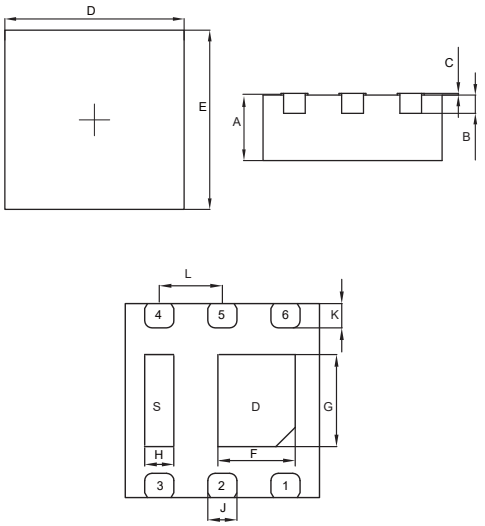




Pin1

YYWW: 4 codes in total
YY is the year
WW is the week

DFN2020-6LE



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.030	0.033	0.750	0.850	
B	0.008		0.200		REF.
C	0.000	0.002	0.000	0.050	
D	0.075	0.083	1.900	2.100	
E	0.075	0.083	1.900	2.100	
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.

N-Channel MOSFET 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	12			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±8V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=12V, V_{GS}=0V			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.4	0.7	1.1	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=8V, I_D=5A		5	8	mΩ
		V_{GS}=4.5V, I_D=5A		7	9	
		V_{GS}=2.5V, I_D=5A		9	11	
Gate Resistance	R_g	f=1MHz, Open drain		1.7		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				15	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=10A			1.2	V
Reverse Recovery Time	t_{rr}	I_F=10A, dI/dt=100A/μs		26		ns
Reverse Recovery Charge	Q_{rr}			12		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V,f=1MHz		1337		pF
Output Capacitance	C_{oss}			228		
Reverse Transfer Capacitance	C_{rss}			201		
Total Gate Charge	Q_g	V_{DS}=10V,V_{GS}=8V,I_D=10A		31		nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			5.3		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=10V, V_{GS}=8V, R_G=4.5Ω, I_D=10A		5.5		ns
Turn-On Rise Time	t_r			11		
Turn-Off Delay Time	$t_{d(off)}$			47		
Turn-Off Fall Time	t_f			21		

Curve Characteristics

Fig.1 - Typical Output Characteristics

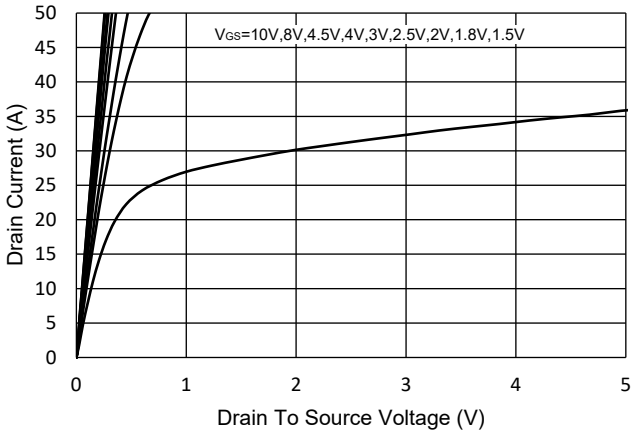


Fig.2 - Transfer Characteristic

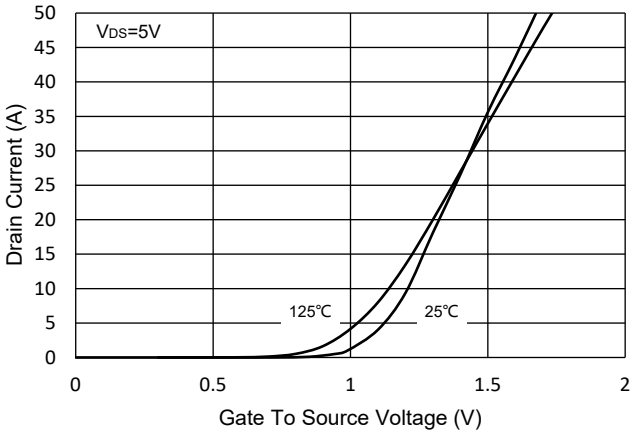


Fig.3 - $R_{DS(ON)}$ - V_{GS}

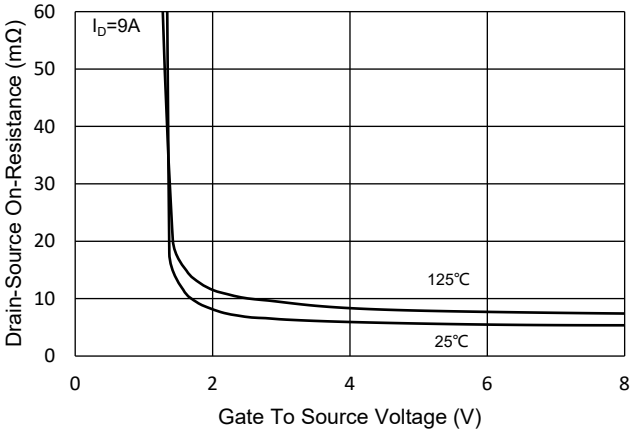


Fig.4 - $R_{DS(ON)}$ - I_D

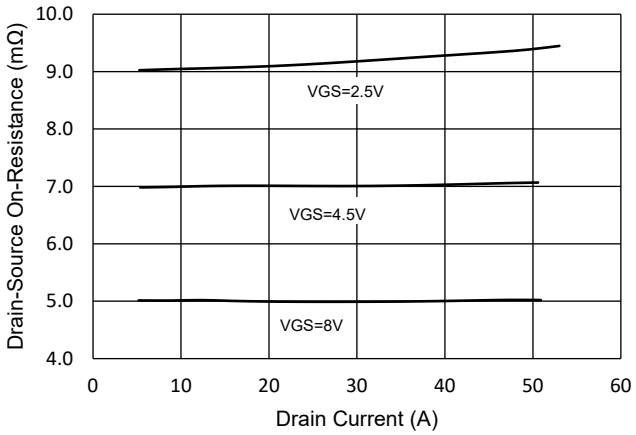


Fig.5 - Capacitance Characteristics

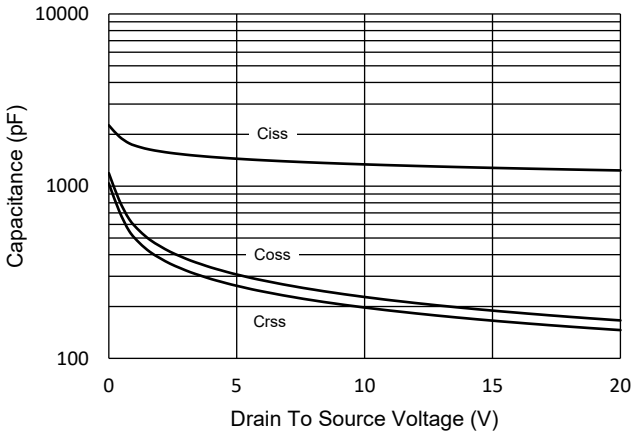
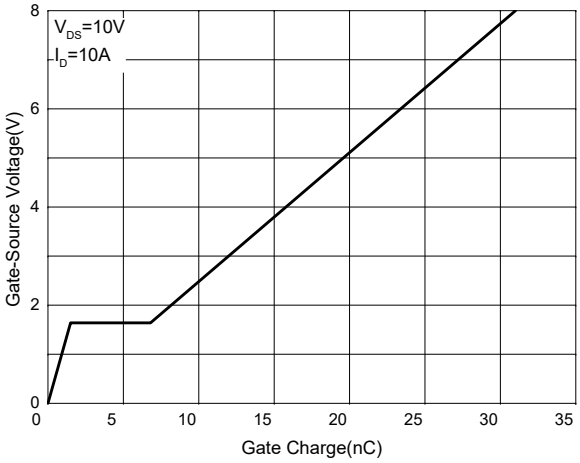


Fig. 6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

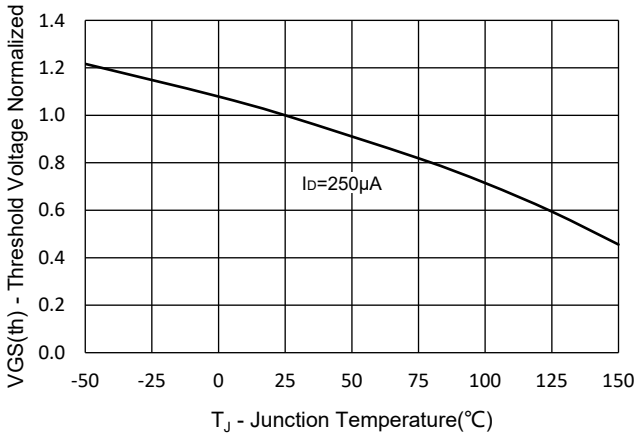


Fig.8 - Normalized On Resistance Characteristics

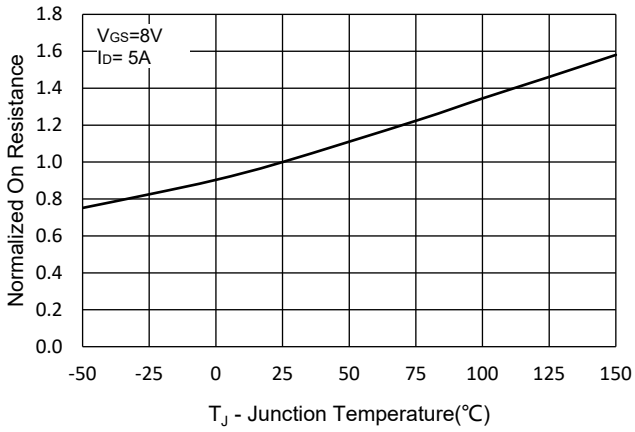


Fig.9 - I_S - V_{SD}

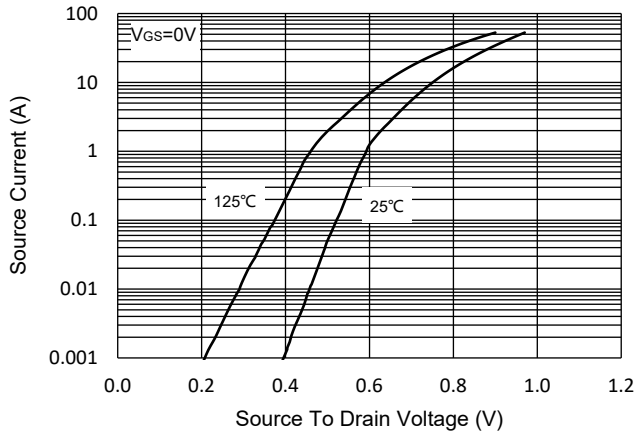


Fig.10 - Drain Current

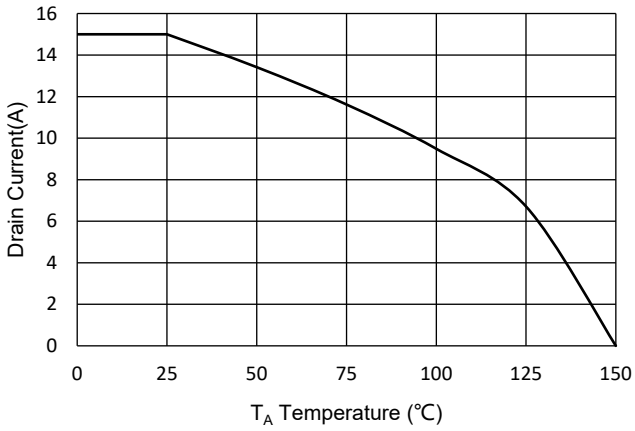
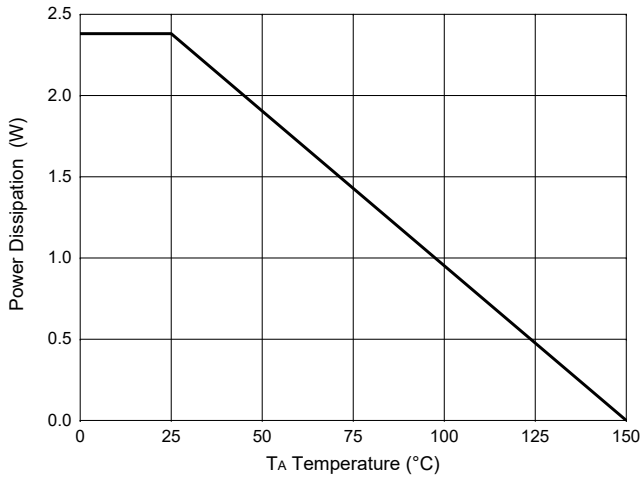


Fig.11-PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

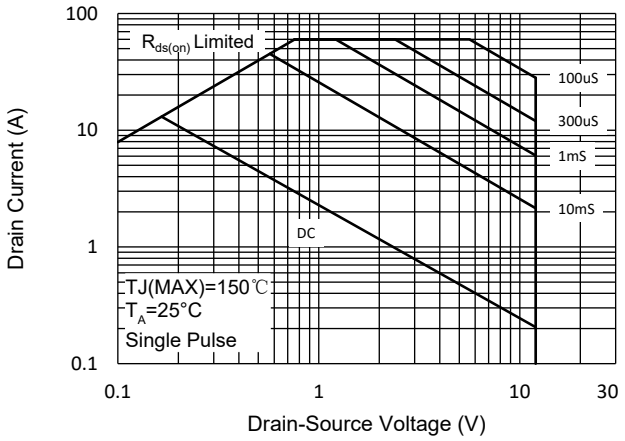
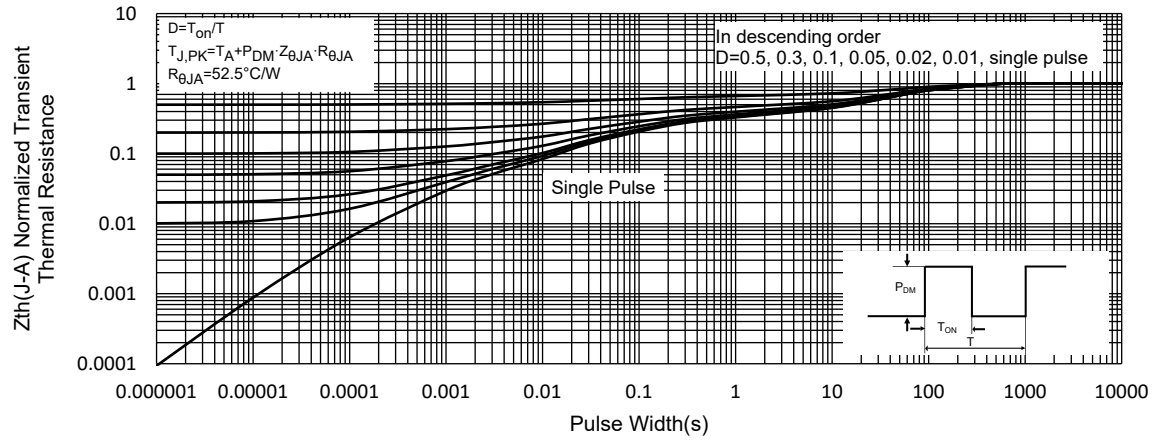


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

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

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

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