

Features

- Trench FET Structure
- High Dense Cell Design for Extremely Low $R_{DS(ON)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Moisture Sensitivity Level 1

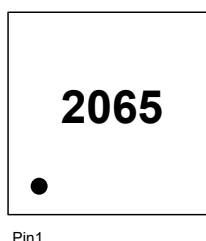
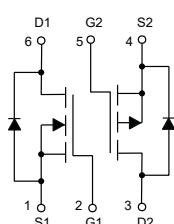
Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Typical Thermal Resistance: 62.5°C/W Junction to Ambient (Note2)

Parameter		Symbol	Rating	Unit
N-Channel				
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current	$T_A=25^\circ\text{C}$	I_D	6	A
	$T_A=70^\circ\text{C}$		4.8	
Pulsed Drain Current		I_{DM}	20	A
Total Power Dissipation		P_D	2.2	W
P-Channel				
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current	$T_A=25^\circ\text{C}$	I_D	-6	A
	$T_A=70^\circ\text{C}$		-4.8	
Pulsed Drain Current		I_{DM}	-20	A
Total Power Dissipation		P_D	1.8	W

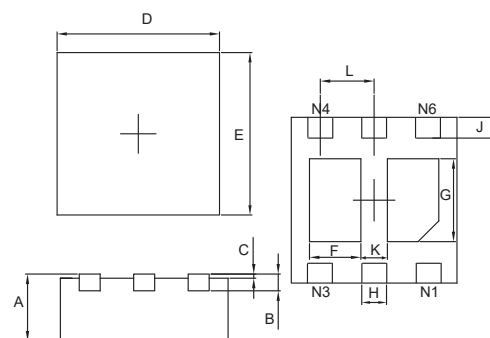
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Surface Mounted on 1 square inch of 2oz copper for FR4 Board.

Internal Structure and Marking Code



Dual N&P-Channel MOSFET

DFN2020-6L



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.030	0.034	0.750	0.850	
B	0.008		0.200		TYP.
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	0.017	0.027	0.440	0.690	
G	0.033	0.043	0.840	1.090	
H	0.010	0.014	0.250	0.350	
J	0.007	0.015	0.175	0.375	
K	0.010	0.014	0.250	0.350	
L	0.026		0.650		TYP.

N-MOSFET ELECTRICAL CHARACTERISTICS (Ta=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	1.0	V
Drain-Source On-Resistance ^(Note3)	R _{DS(on)}	V _{GS} =4.5V, I _D =5A		20	25	mΩ
		V _{GS} =2.5V, I _D =4A		25	32	mΩ
		V _{GS} =1.8V, I _D =2A		33	49	mΩ
Diode Characteristics						
Diode Forward Voltage ^(Note3)	V _{SD}	V _{GS} =0V, I _S =3A			1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =4.5 A, dI _{SD} /dt=100A/μs		17.9		nS
Reverse Recovery Charge	Q _{rr}			1.38		nC
Dynamic Characteristics ^(Note4)						
Input Capacitance	C _{iss}	V _{DS} =10V,V _{GS} =0V,f=1MHz		418		pF
Output Capacitance	C _{oss}			82		
Reverse Transfer Capacitance	C _{rss}			70		
Total Gate Charge	Q _g	V _{GS} =4.5V,V _{DS} =10V,I _D =4.5A		6.07		nC
Gate-Source Charge	Q _{gs}			1.16		
Gate-Drain Charge	Q _{gd}			1.64		
Turn-On Delay Time	t _{d(on)}	V _{GS} =4.5V,V _{DS} =10V,R _L =1.5Ω R _{GEN} =3Ω,I _{DS} =4.5A		8.1		ns
Turn-On Rise Time	t _r			52.9		
Turn-Off Delay Time	t _{d(off)}			23.5		
Turn-Off Fall Time	t _f			57.9		

Notes:

3.Pulse Test: Pulse Width $\leq 300\mu A$, Duty Cycles $\leq 2\%$.

4.Guaranteed by Design, Not Subject to Production Testing.

P-MOSFET ELECTRICAL CHARACTERISTICS (Ta=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	-1.0	V
Drain-Source On-Resistance ^(Note3)	R _{DS(on)}	V _{GS} =-4.5V, I _D =-5A		33	42	mΩ
		V _{GS} =-2.5V, I _D =-4A		39	55	mΩ
		V _{GS} =-1.8V, I _D =-3A		49	75	mΩ
Diode Characteristics						
Diode Forward Voltage ^(Note3)	V _{SD}	V _{GS} =0V, I _S =-3A			-1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =-4 A, dI _{SD} /dt=100A/μs		24.8		nS
Reverse Recovery Charge	Q _{rr}			4.38		nC
Dynamic Characteristics ^(Note4)						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHz		1010		pF
Output Capacitance	C _{oss}			130		
Reverse Transfer Capacitance	C _{rss}			109		
Total Gate Charge	Q _g	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-4A		9.33		nC
Gate-Source Charge	Q _{gs}			2.05		
Gate-Drain Charge	Q _{gd}			2.19		
Turn-On Delay Time	t _{d(on)}	V _{GS} =-4.5V, V _{DS} =-10V, R _L =2.5Ω R _{GEN} =3Ω, I _{DS} =-4A		8.2		ns
Turn-On Rise Time	t _r			53.1		
Turn-Off Delay Time	t _{d(off)}			23.3		
Turn-Off Fall Time	t _f			58.4		

N-MOSFET Curve Characteristics

Fig. 1 - Output Characteristics

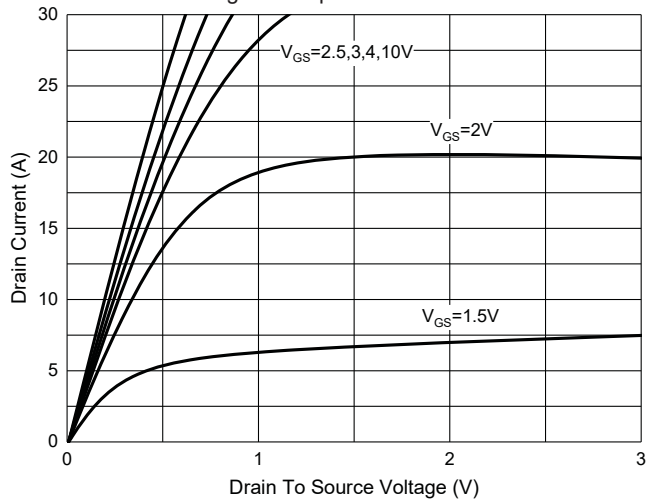


Fig. 2 - Transfer Characteristics

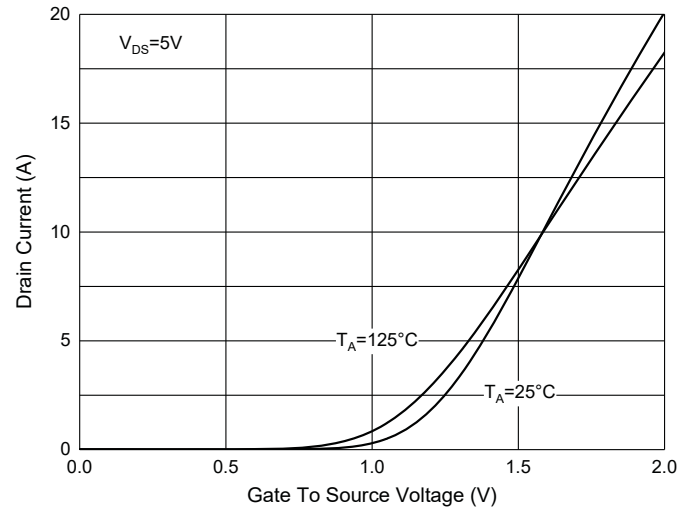


Fig. 3 - Normalized On Resistance Characteristics

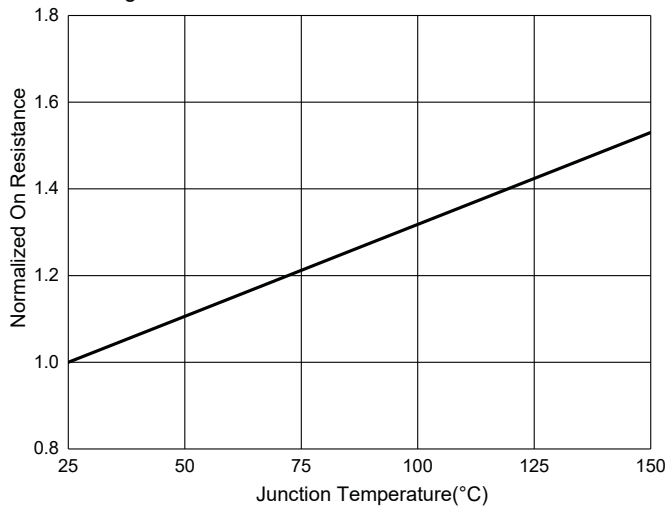


Fig. 4 - Gate Charge

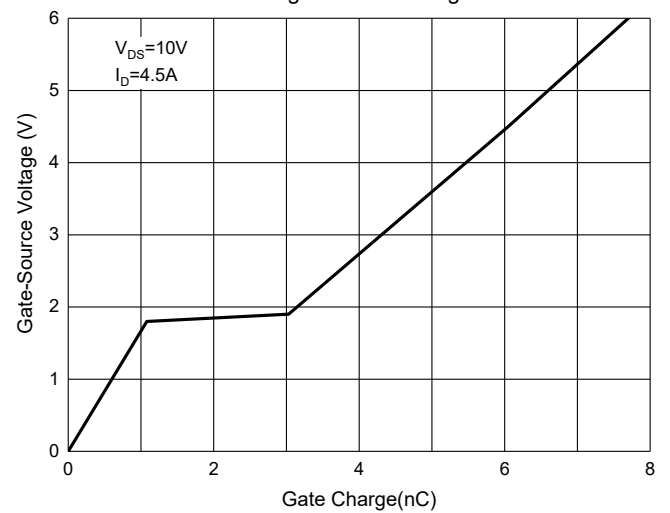


Fig. 5 - Capacitance Characteristics

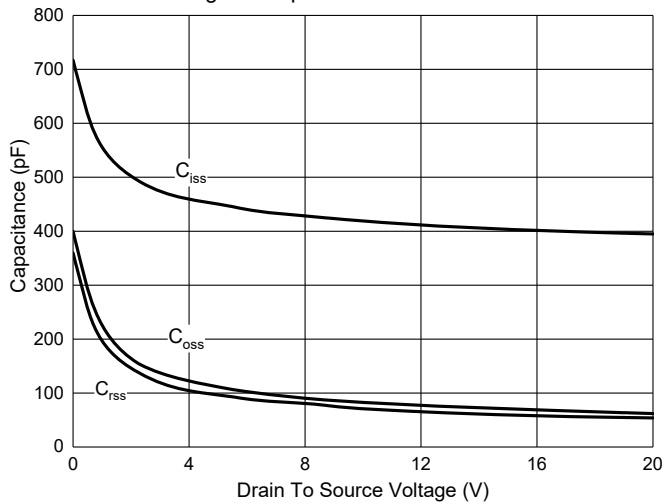
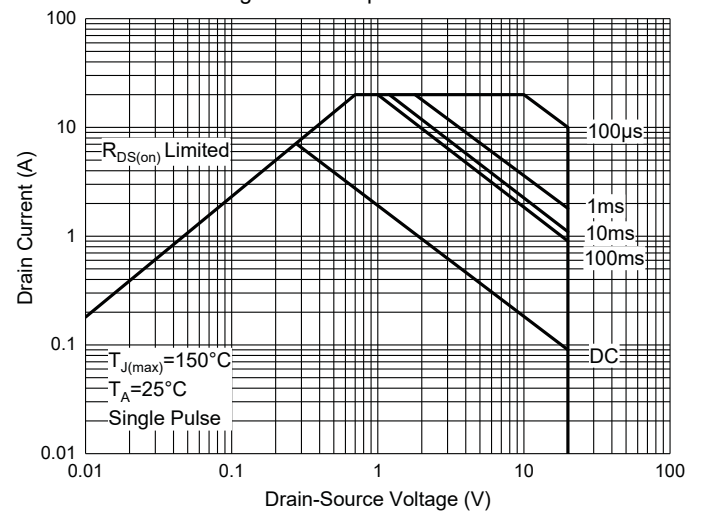


Fig. 6 - Safe Operation Area



P-MOSFET Curve Characteristics

Fig. 7 - Output Characteristics

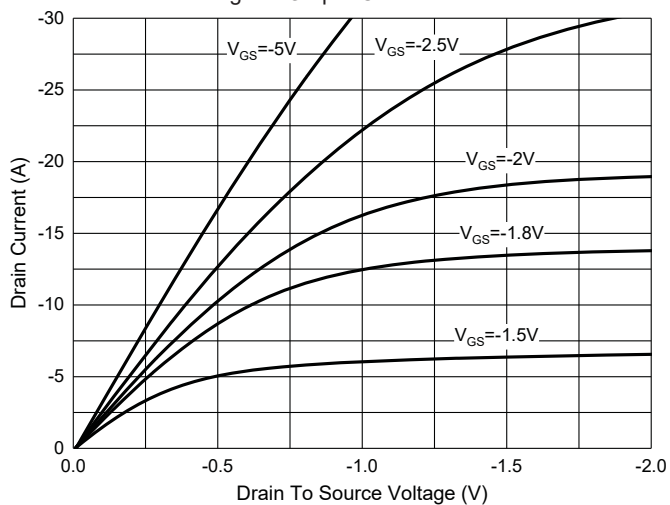


Fig. 8 - Transfer Characteristics

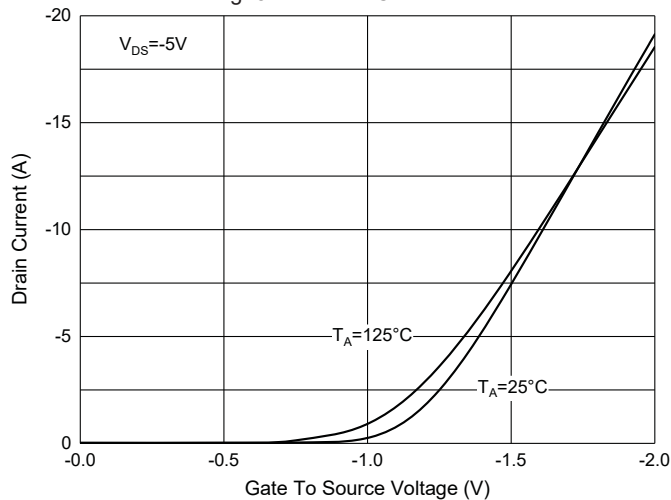


Fig. 9 - Normalized On Resistance Characteristics

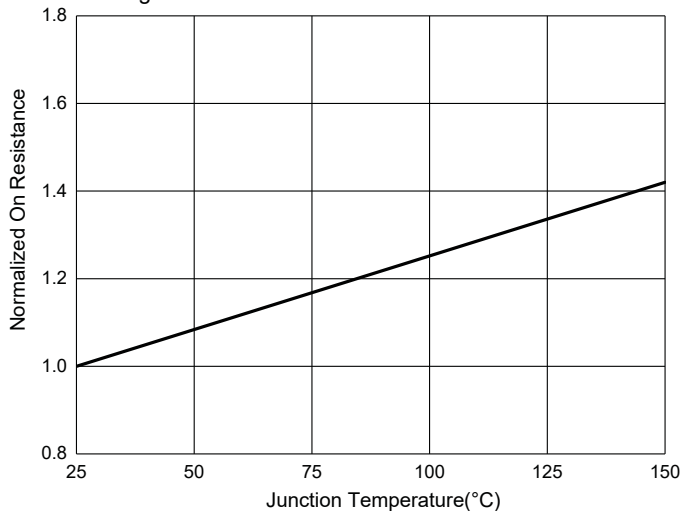


Fig. 10 - Gate Charge

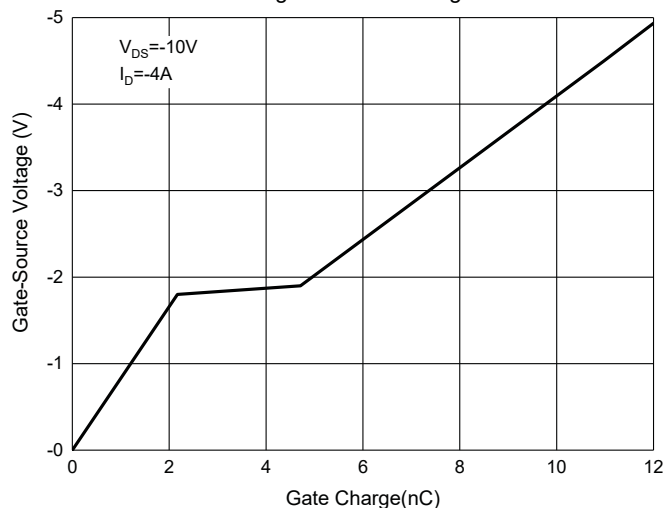


Fig. 11 - Capacitance Characteristics

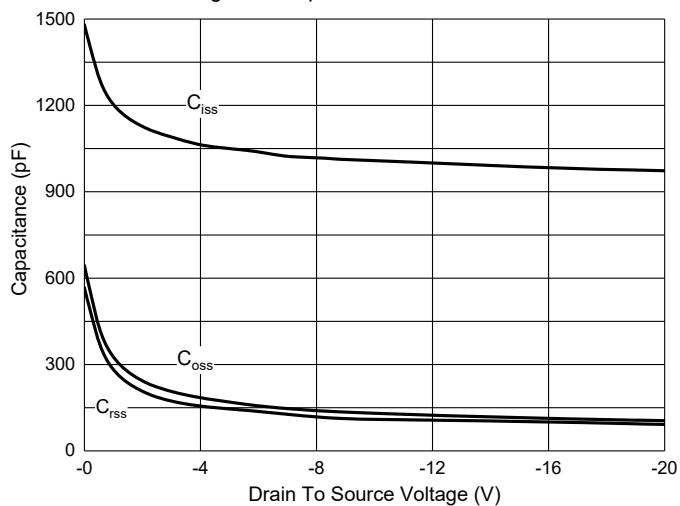
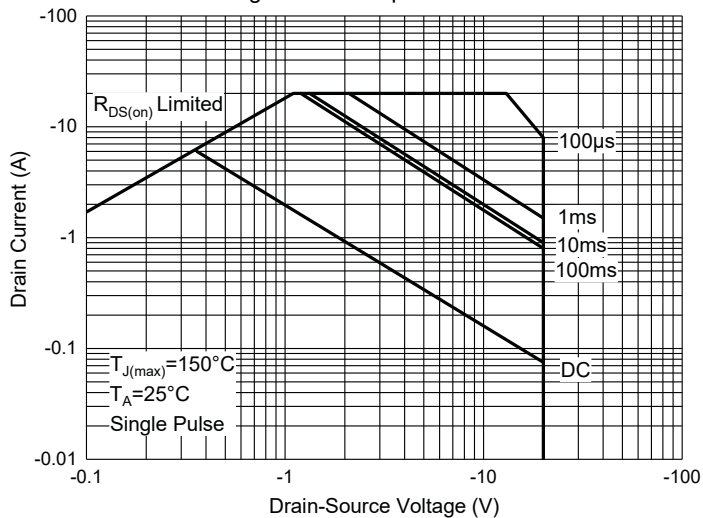


Fig. 12 - Safe Operation Area



Ordering Information

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

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