P-Channel Enhancement Mode Power MOSFET

Description

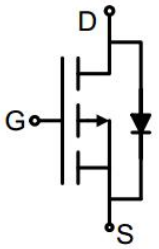
The G220P02D2 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

General Features

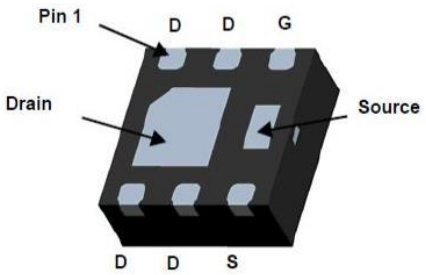
- V_{DS} -20V
- I_D (at V_{GS} = -10V) -8A
- $R_{DS(ON)}$ (at V_{GS} = -4.5V) < 20mΩ
- $R_{DS(ON)}$ (at V_{GS} = -2.5V) < 25mΩ
- 100% Avalanche Tested
- RoHS Compliant

Application

- Power switch
- DC/DC converters



Schematic diagram



DFN2*2-6L

Ordering Information

Device	Package	Marking	Packaging
G220P02D2	DFN2*2-6L	G220P02	3000pcs/Reel

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Continuous Drain Current	I_D	-8	A
Pulsed Drain Current (note1)	I_{DM}	-32	A
Gate-Source Voltage	V_{GS}	±12	V
Power Dissipation	P_D	3.5	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 To 150	ºC

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	R_{thJA}	36	ºC/W

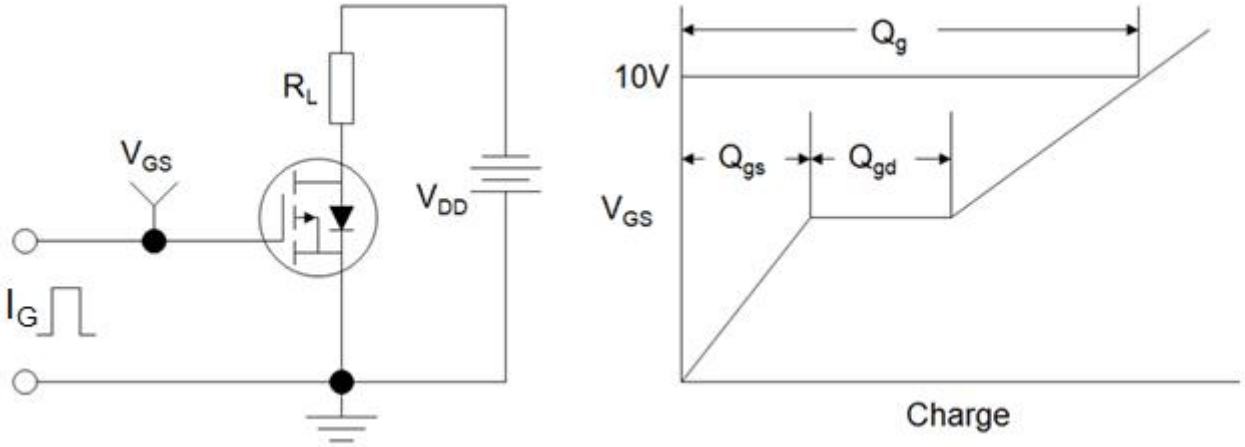
Specifications T_J = 25ºC, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V	--	--	-1	μA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±12V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.5	-0.7	-1.2	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -6A	--	15	20	mΩ
		V_{GS} = -2.5V, I_D = -5A	--	19	25	
Forward Transconductance	g_{FS}	V_{DS} = -5V,I_D = -6A	--	17	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -10V, f = 1.0MHz	--	1873	--	pF
Output Capacitance	C_{oss}		--	233	--	
Reverse Transfer Capacitance	C_{rss}		--	230	--	
Total Gate Charge	Q_g	V_{DD} = -10V, I_D = -6A, V_{GS} = -10V	--	14	--	nC
Gate-Source Charge	Q_{gs}		--	2.3	--	
Gate-Drain Charge	Q_{gd}		--	3.6	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -10V, I_D = -6A, R_G = 1Ω	--	26	--	ns
Turn-on Rise Time	t_r		--	24	--	
Turn-off Delay Time	$t_{d(off)}$		--	45	--	
Turn-off Fall Time	t_f		--	20	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25ºC	--	--	-8	A
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = -6A, V_{GS} = 0V	--	--	-1.2	V
Reverse Recovery Charge	Q_{rr}	I_F = -6A, V_{GS} = 0V di/dt=-100A/us	--	8	--	nC
Reverse Recovery Time	T_{rr}		--	24	--	ns

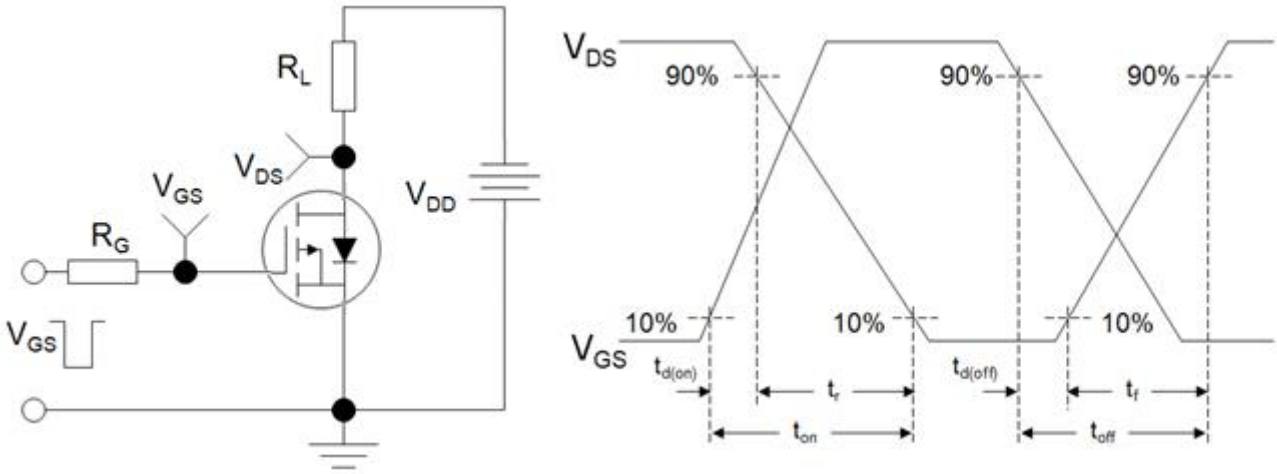
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical R_G

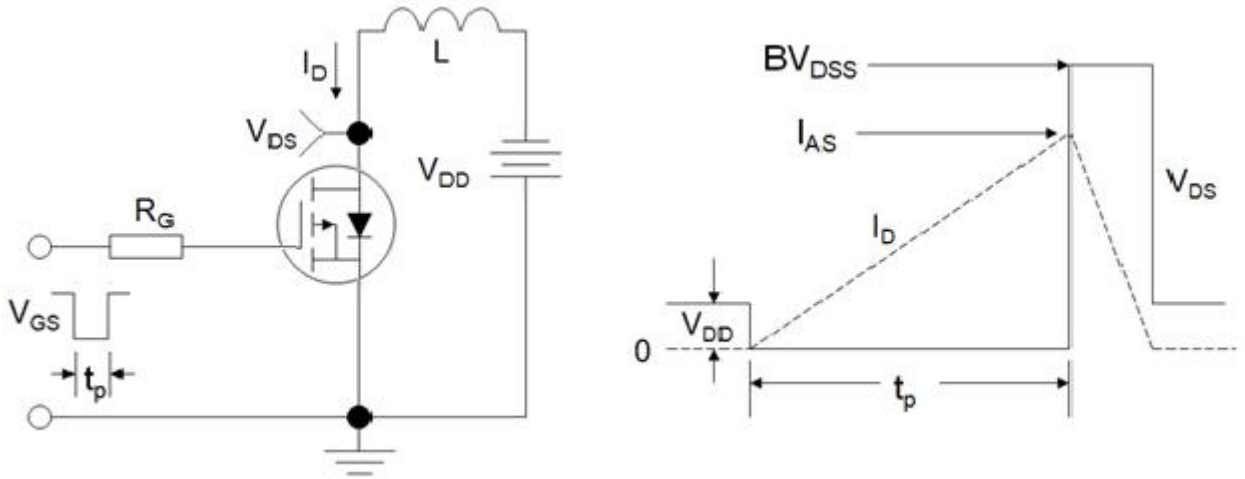
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics

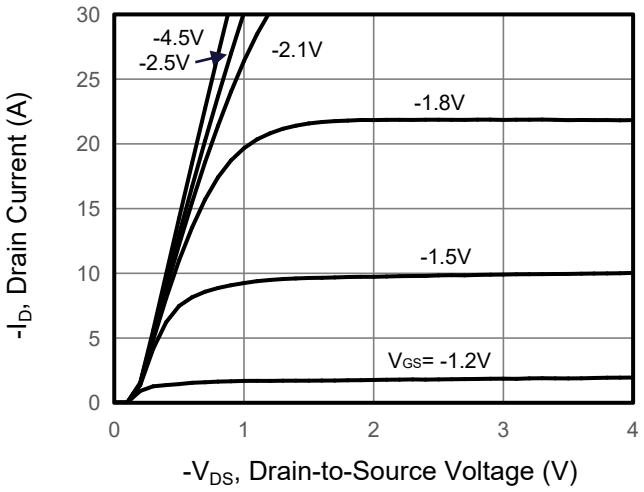


Figure 2. Transfer Characteristics

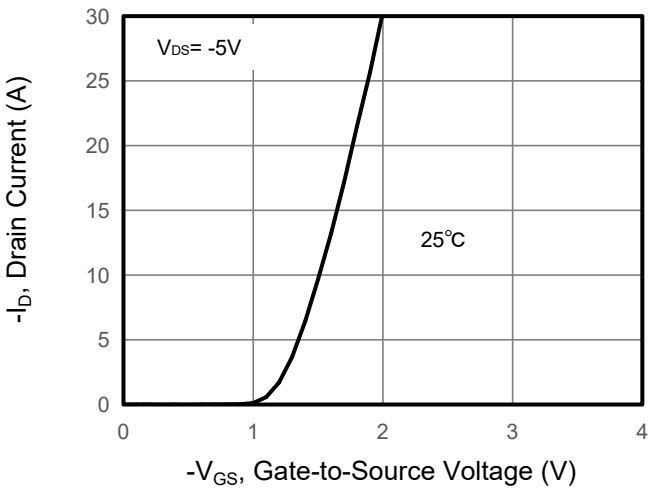


Figure 3.Drain Source On Resistance

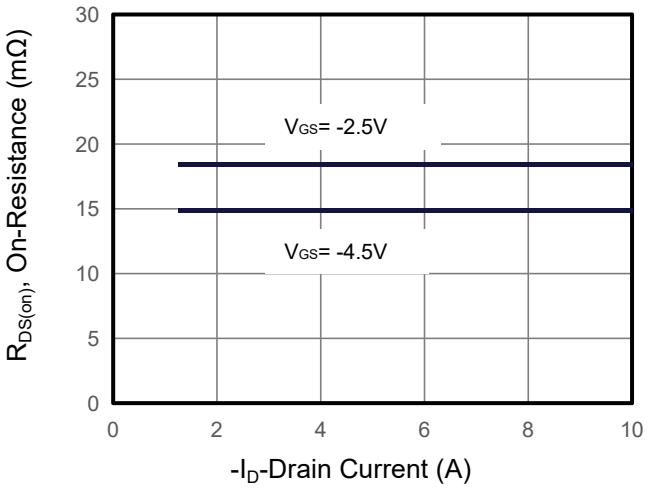


Figure 4. Gate Charge

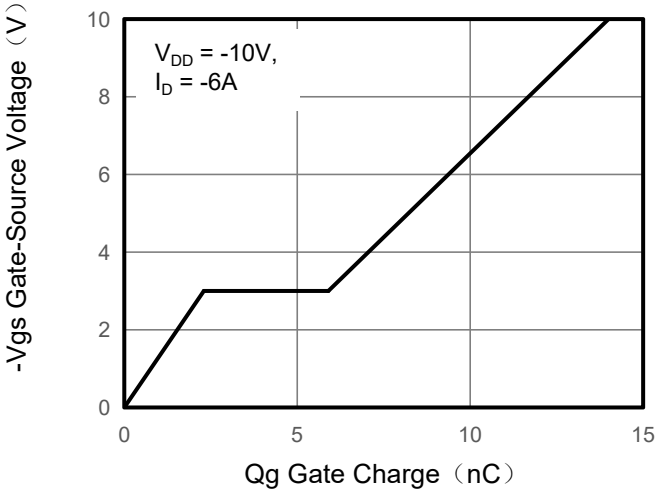


Figure 5. Capacitance

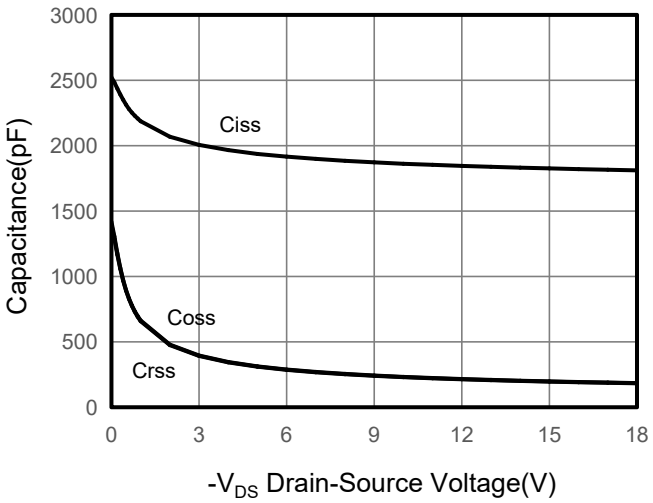
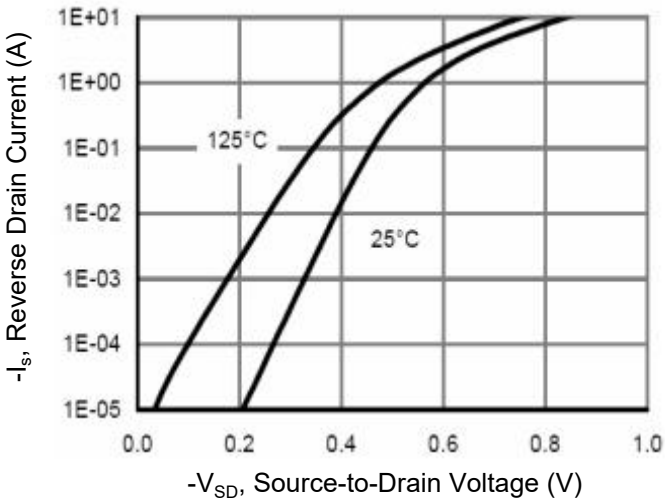


Figure 6. Source-Drain Diode Forward



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. Drain-Source On-Resistance

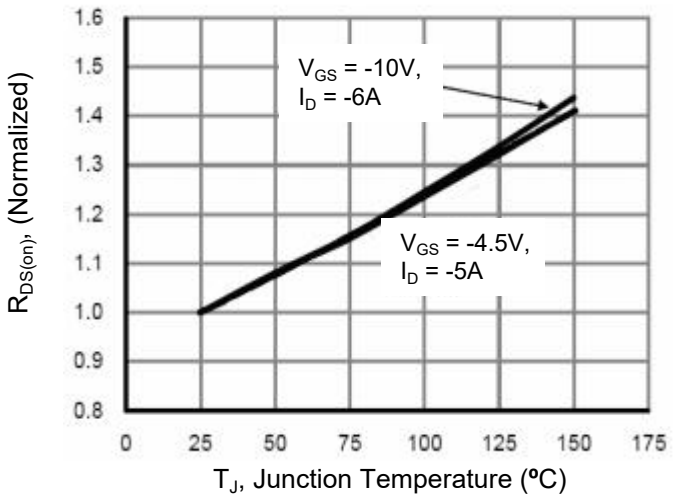


Figure 10. Safe Operation Area

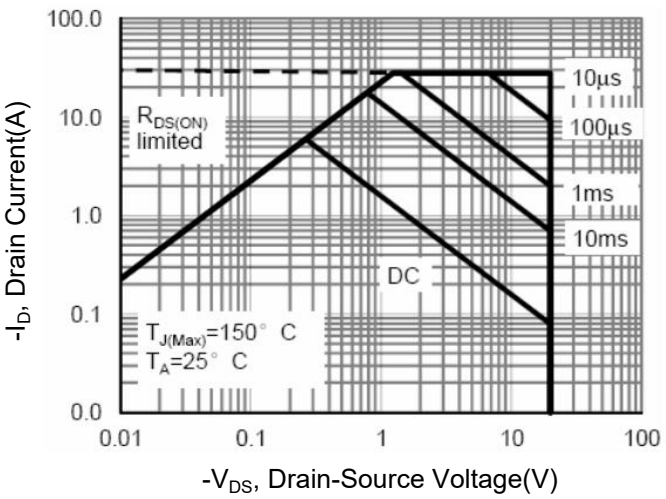
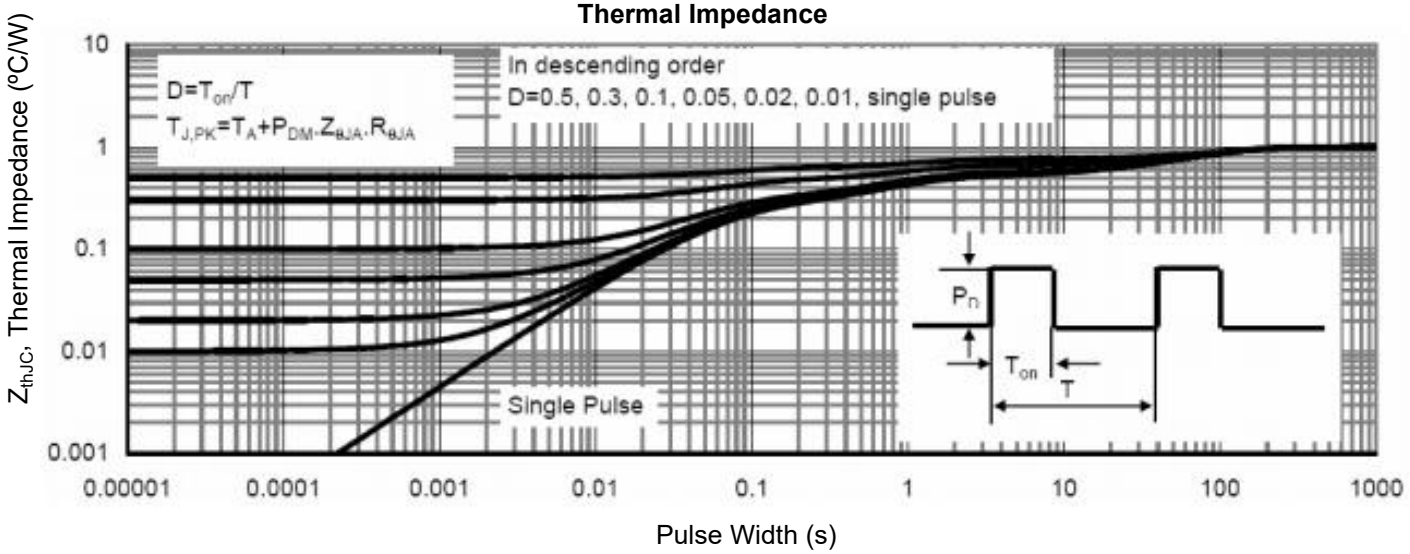
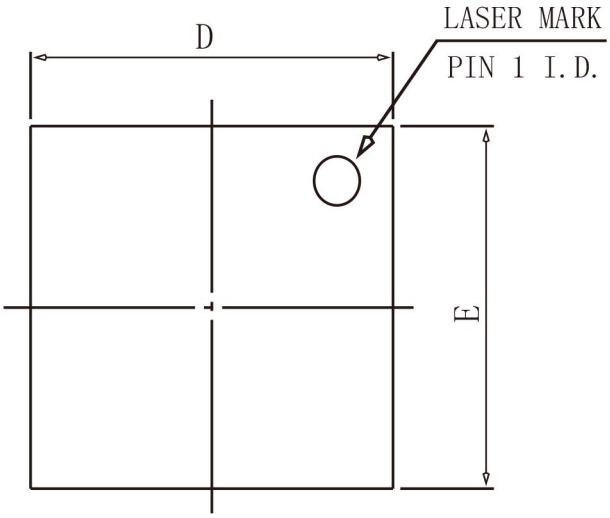


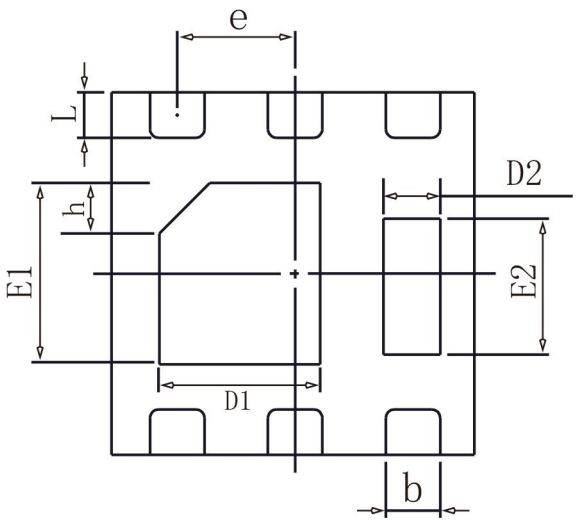
Figure 9. Normalized Maximum Transient Thermal Impedance



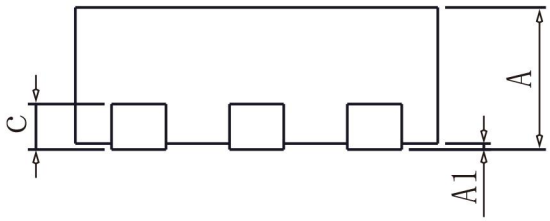
DFN2*2-6L Package Information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	NA	0.02	0.05
b	0.20	0.27	0.34
c	0.18	0.20	0.25
D	1.95	2.00	2.07
E	1.95	2.00	2.07
D1	0.80	0.90	1.00
E1	0.90	1.00	1.10
D2	0.20	0.30	0.40
E2	0.65	0.75	0.85
L	0.20	0.25	0.35
h	0.20	0.25	0.30
e	0.65BSC		