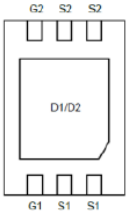
GPCD2007

20V Dual N-Channel MOSFET

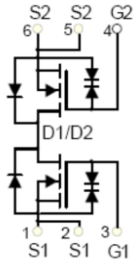
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	12.5mΩ@4.5V	8A
	13mΩ@4.0V	
	13.5mΩ@3.8V	
	14.5mΩ@3.1V	
	17mΩ@2.5V	

DFN2X3-6L



Schematic diagram

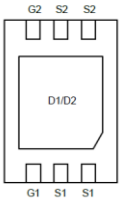


Description

The GPCD2007 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. It is ESD protected. This device is suitable for use as a uni-directional or bi-directional load switch,facilitated by its common-drain configuration.

Marking:

Top



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ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	8	A
Pulsed Drain Current	I_{DM}^*	45	A
Power Dissipation	P_D	1.5	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	83.3	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃
Lead Temperature for Soldering Purposes(1/8'' from case for 10 s)	T_L	260	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
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} =16V,V_{GS} = 0V			1	μA
Gate-body Leakage Current	I_{GSS}	V_{GS} =±4.5V, V_{DS} = 0V			±1	μA
		V_{GS} =±8V, V_{DS} = 0V			±10	μA
Gate Threshold Voltage[1]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.4	0.7	1.0	V
Drain-source On-resistance[1]	$R_{DS(on)}$)	V_{GS} =4.5V, I_D =3A	10	12.5	15	mΩ
		V_{GS} =4.0V, I_D =3A	10.5	13	16	
		V_{GS} =3.8V, I_D =3A	10.8	13.5	16.5	
		V_{GS} =3.1V, I_D =3A	12	14.5	18	
		V_{GS} =2.5V, I_D =3A	13	17	23	
Forward Tranconductance[1]	g_{FS}	V_{DS} =5V, I_D =7A	9			S
Diode Forward Voltage[1]	V_{SD}	I_S=1A, V_{GS} = 0V			1	V
DYNAMIC PARAMETERS[2]						
Input Capacitance	C_{iss}	V_{DS} =10V,V_{GS} =0V,f =1MHz		1150		pF
Output Capacitance	C_{oss}			185		
Reverse Transfer Capacitance	C_{rss}			145		
Total Gate Charge	Q_g	V_{DS} =10V,V_{GS} =4.5V,I_D =7A		15		nC
Gate-source Charge	Q_{gs}			0.8		
Gate-drain Charge	Q_{gd}			3.2		
SWITCHING PARAMETERS[2]						
Turn-on delay Time	$t_{d(on)}$	V_{GS}=5V,V_{DD}=10V,R_L=1.35Ω,R_{GEN}=3Ω		6		ns
Turn-on Rise Time	t_r			13		
Turn-off Delay Time	$t_{d(off)}$			52		
Turn-off Fall Time	t_f			16		
Drain-Source Diode Characteristics						
Diode Forward Current	I_S				6.0	A

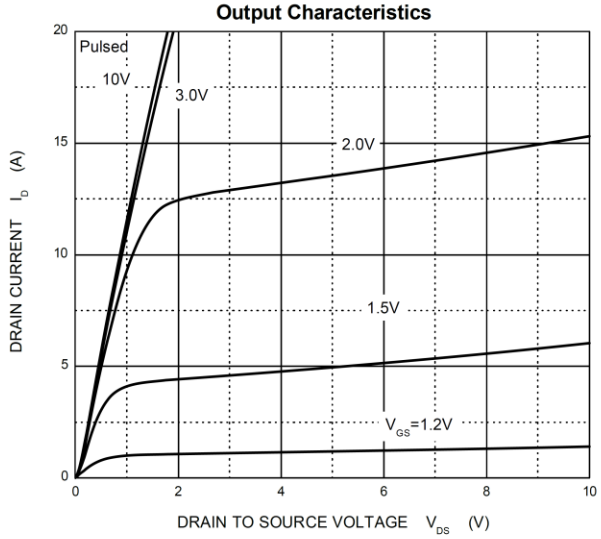
Notes :

1. Pulse Test : Pulse width≤300μs, duty cycle≤0.5%.

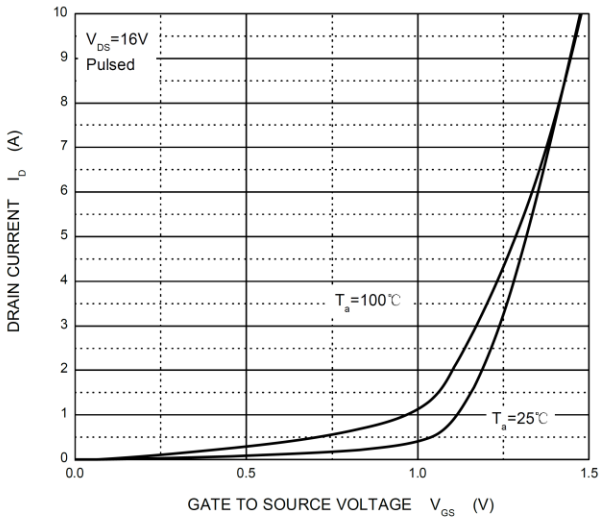
2. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

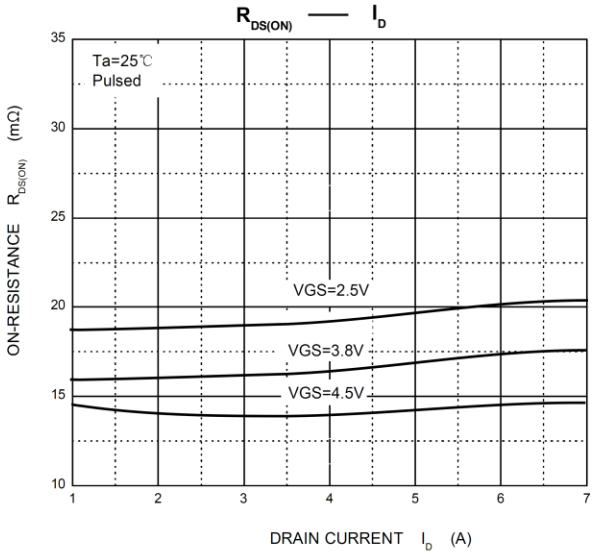
Output Characteristics



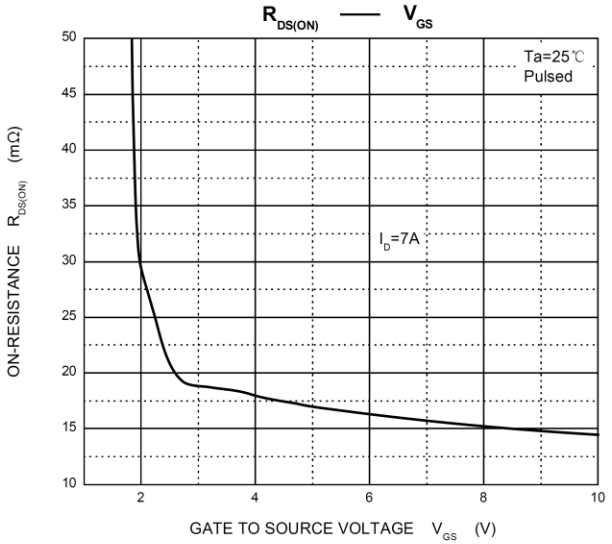
Transfer Characteristics



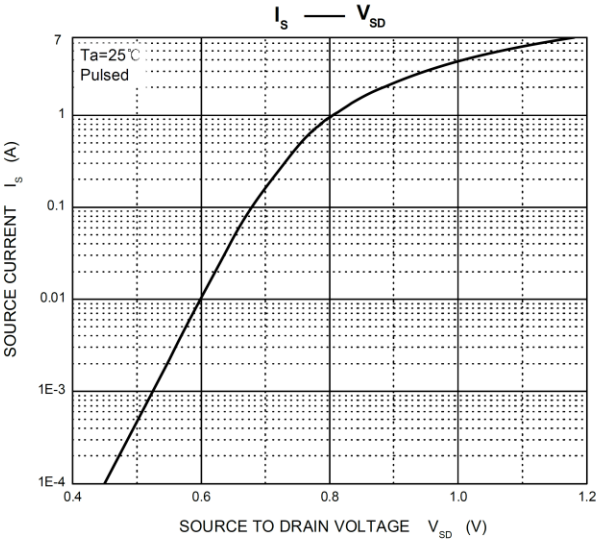
$R_{DS(ON)}$ — I_D



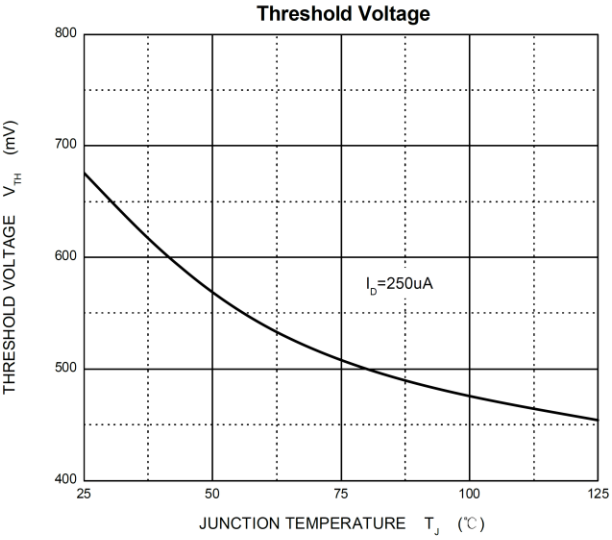
$R_{DS(ON)}$ — V_{GS}

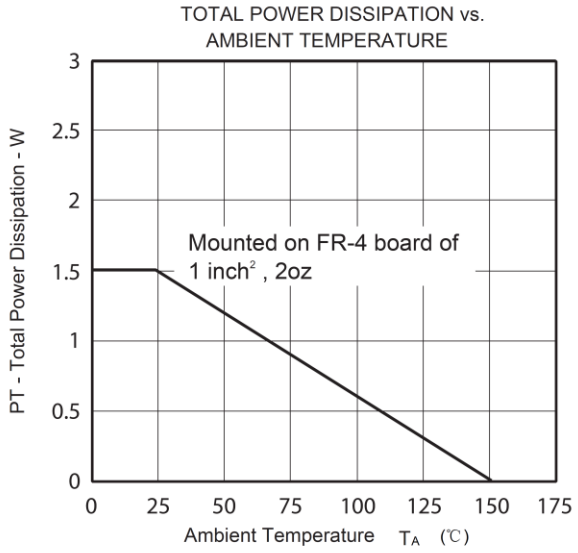


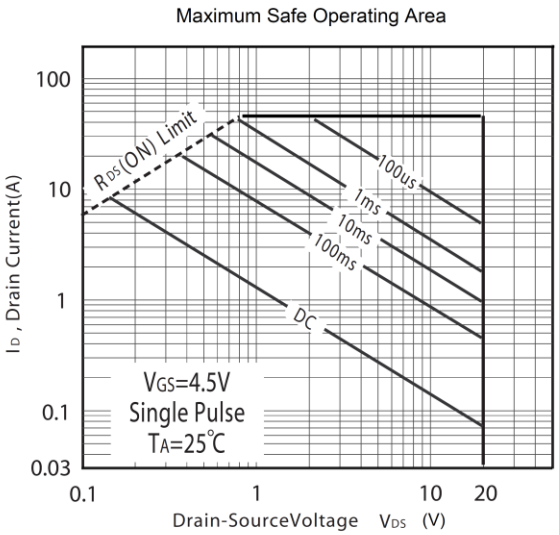
I_S — V_{SD}

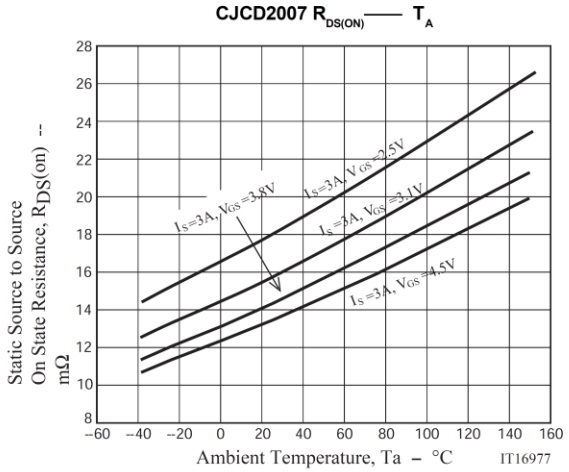


Threshold Voltage

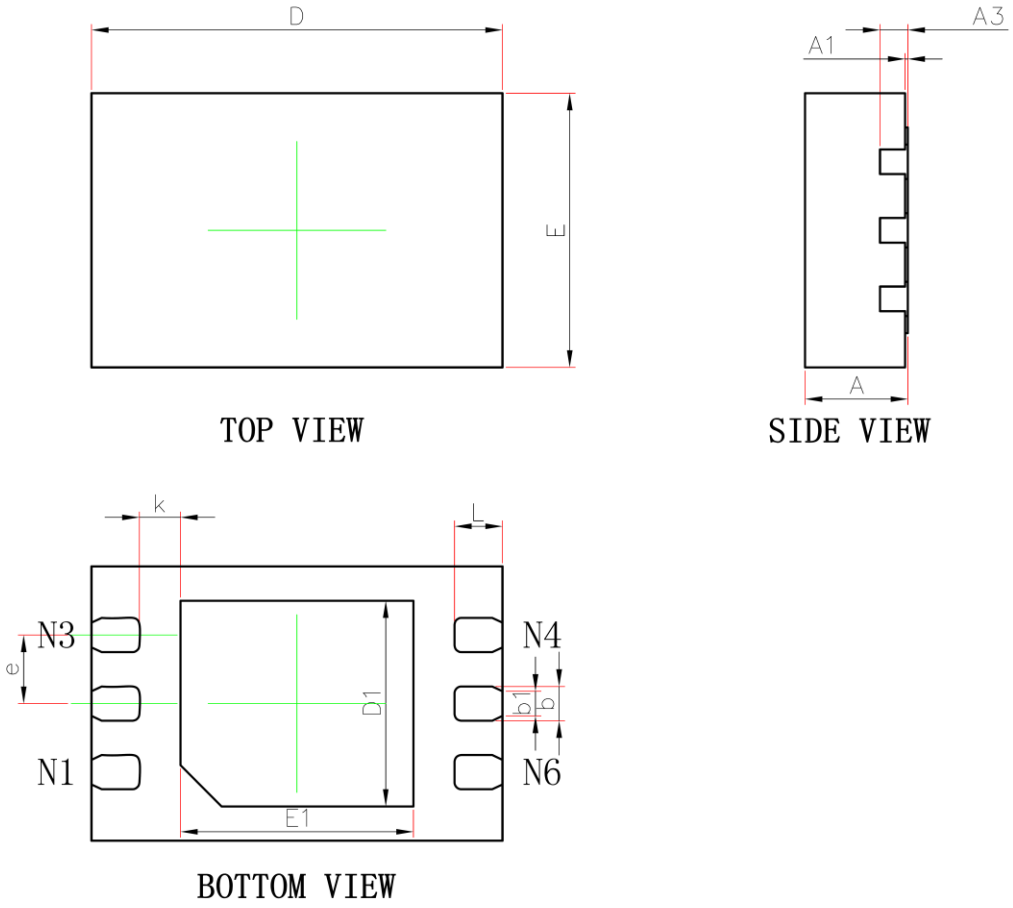



TOTAL POWER DISSIPATION vs.
AMBIENT TEMPERATURE
PT - Total Power Dissipation - W
Mounted on FR-4 board of
1 inch², 2oz
Ambient Temperature TA (℃)


Maximum Safe Operating Area
ID , Drain Current(A)
RDS(ON) Limit
100us
1ms
10ms
100ms
DC
VGS=4.5V
Single Pulse
TA=25℃
Drain-SourceVoltage VDS (V)


CJCD2007 RDS(ON)—— TA
Static Source to Source
On State Resistance, RDS(on) --
mΩ
IS=3A, VGS=2.5V
IS=3A, VGS=3.1V
IS=3A, VGS=3.8V
IS=3A, VGS=4.5V
Ambient Temperature, Ta – °C
IT16977

DFN2X3-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF		0.008REF	
D	2.900	3.100	0.114	0.122
E	1.900	2.100	0.075	0.083
D1	1.400	1.600	0.055	0.063
E1	1.600	1.800	0.063	0.071
b	0.200	0.300	0.008	0.012
k	0.150	0.350	0.006	0.014
b1	0.180REF		0.007REF	
e	0.500BSC		0.020BSC	
L	0.300	0.450	0.012	0.018