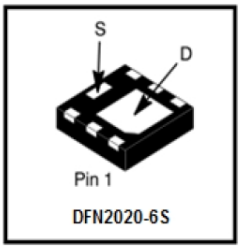
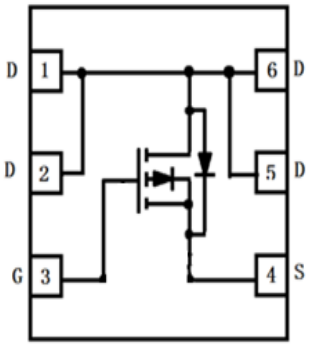
LP1221DT2AG

12V P-Channel Enhancement MOSFET



1. FEATURES

- VDS = -12V.
  RDS(ON)≤21.5mΩ, VGS@-4.5V.
  RDS(ON)≤28mΩ, VGS@-2.5V.
  RDS(ON)≤48mΩ, VGS@-1.8V.
- Low thermal impedance.
- Fast switching speed.
- We declare that the material of product are Halogen Free and compliance with RoHS requirements.



2.APPLICATIONS

- DC/DC Conversion
- Power Routing
- Load Switch

3. ORDERING INFORMATION

Device	Marking	Shipping
LP1221DT2AG	A12	4000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC unless otherwise stated)

Parameter		Symbol	Limits	Unit
Drain−to−Source Voltage		VDS	-12	V
Gate−to−Source Voltage		VGS	± 12	V
Continuous Drain Current(Note 1)	TA =25°C	ID	-8	A
	TA =70°C		-7	
Continuous Drain Current(Note 3)	TA =25°C		-5	
Pulsed Drain Current (Note 2)		IDM	-32	A
Pulsed Drain Current (Note 3)			-20	
Power Dissipation(Note 1)	TA =25°C	PD	1.9	W
	TA =70°C		1.4	
Power Dissipation(Note 3)	TA =25°C		1	
Operating Junction and Storage Temperature Range		TJ , TSTG	−55 ~+150	ºC

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Thermal Resistance,Junction-to-Ambient(Note 1)	RθJA	65	℃/W
Thermal Resistance,Junction-to-Ambient(Note 3)	RθJA	127	
Thermal Resistance,Junction-to-Case	RθJC	12	

1.Surface mounted on 1.5 x 1.5 FR4 board using 1 sq in pad, 2 oz Cu.

2.Pulse width limited by maximum junction temperature.

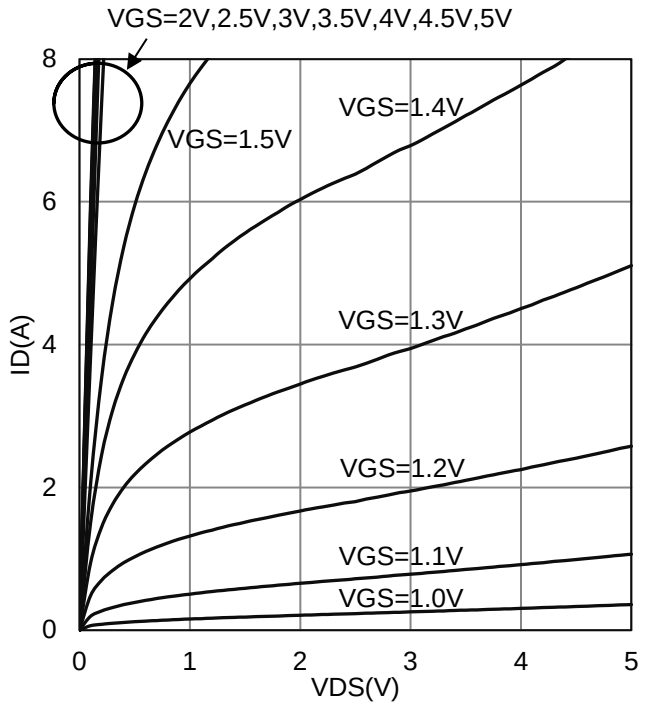
3.Surface mounted on FR4 board using the minimum recommended pad size.

6. ELECTRICAL CHARACTERISTICS

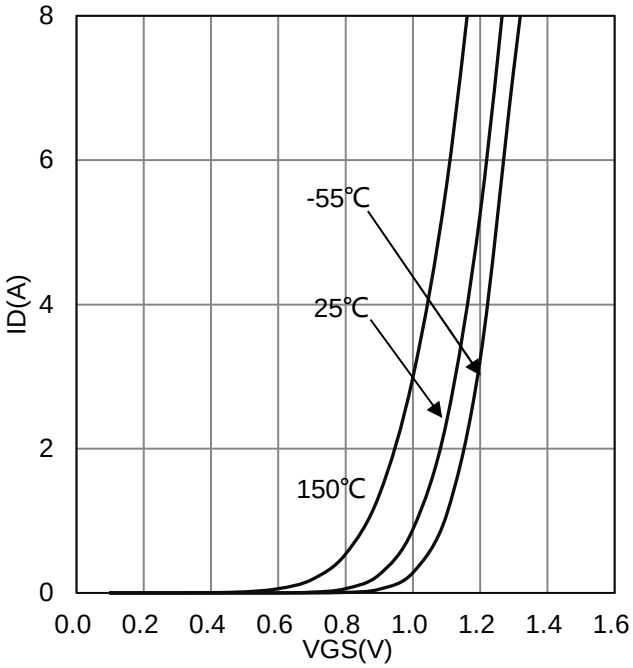
Characteristic		Symbol	Min.	Typ.	Max.	Unit
Static						
Drain–Source Breakdown Voltage (VGS = 0 V , ID = -250 uA)		V(BR)DSS	-12	-	-	V
Gate-Source Threshold Voltage (VDS = VGS , ID = -250 uA)		VGS(th)	-0.5	-	-1	V
Gate-Body Leakage (VDS = 0 V, VGS = ± 12 V)		IGSS	-	-	±10	μA
Zero Gate Voltage Drain Current (VDS = -12 V, VGS = 0 V)		IDSS	-	-	-1	μA
Drain-Source On-Resistance(Note 4) (VGS = -4.5 V, ID = -7 A) (VGS = -2.5 V, ID = -5 A) (VGS = -1.8 V, ID = -2 A)		RDS(on)	- - -	16 19 35	21.5 28 48	mΩ
Diode Forward Voltage(Note 4) (IS = -1 A, VGS = 0 V)		VSD	-	-	-1.5	V
Dynamic						
Total Gate Charge	(VDS = -15 V, VGS = -4.5 V, ID = -4 A)	Qg	-	16.5	-	nC
Gate-Source Charge		Qgs	-	2.3	-	
Gate-Drain Charge		Qgd	-	6	-	
Input Capacitance	(VDS = -15 V, VGS = 0 V, f = 1 MHz)	Ciss	-	1400	-	pF
Output Capacitance		Coss	-	232	-	
Reverse Transfer Capacitance		Crss	-	207	-	

4.Pulse test: PW ≤ 300us duty cycle ≤ 2%.

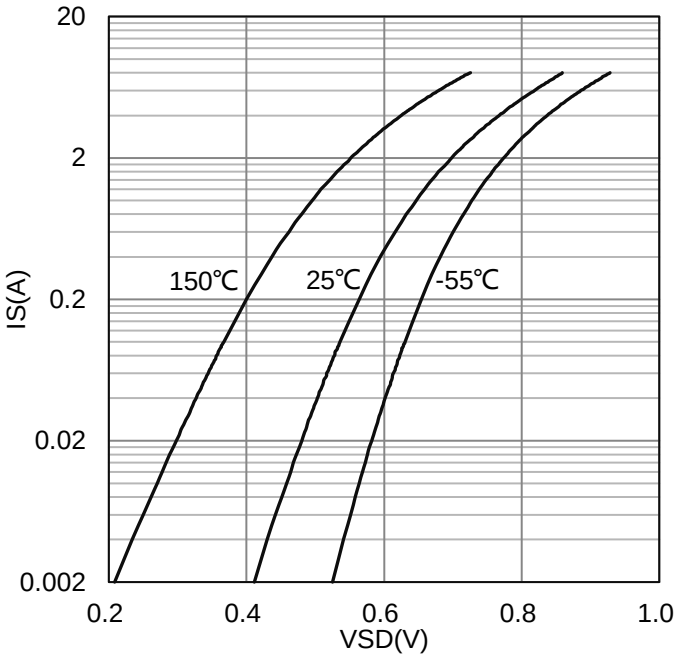
7. ELECTRICAL CHARACTERISTICS CURVES



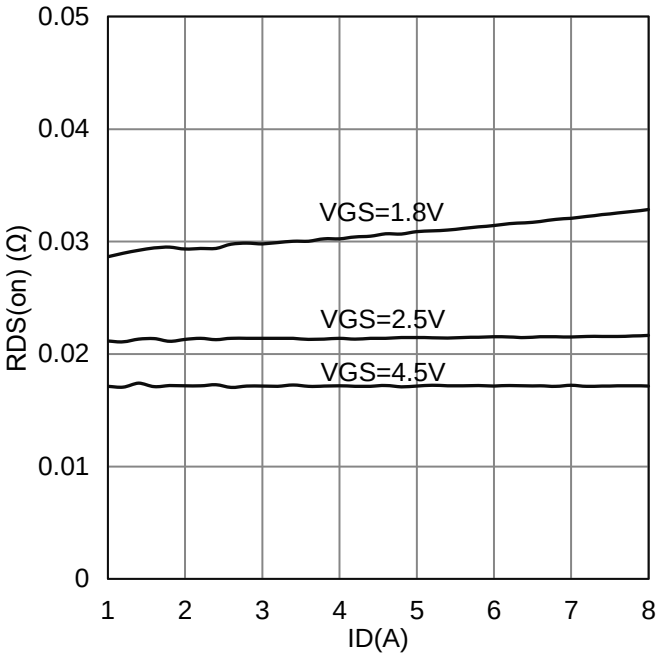
ID vs. VDS



ID vs. VGS

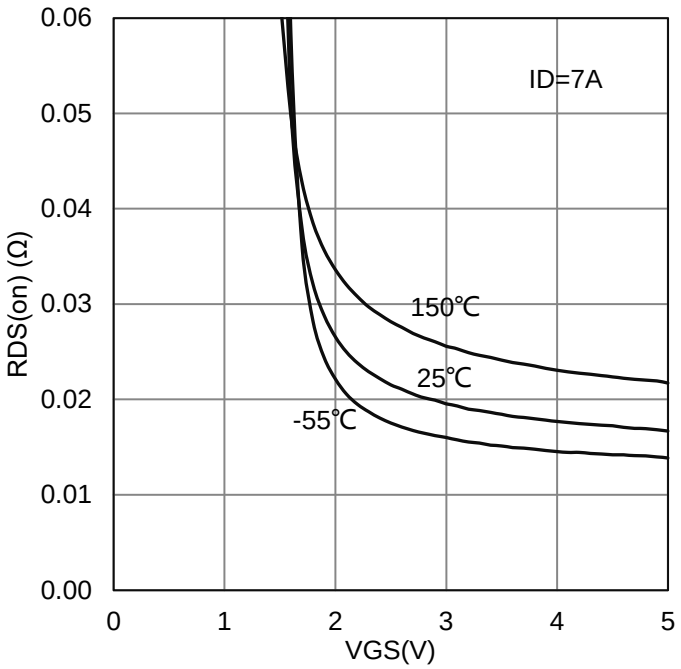


IS vs. VSD

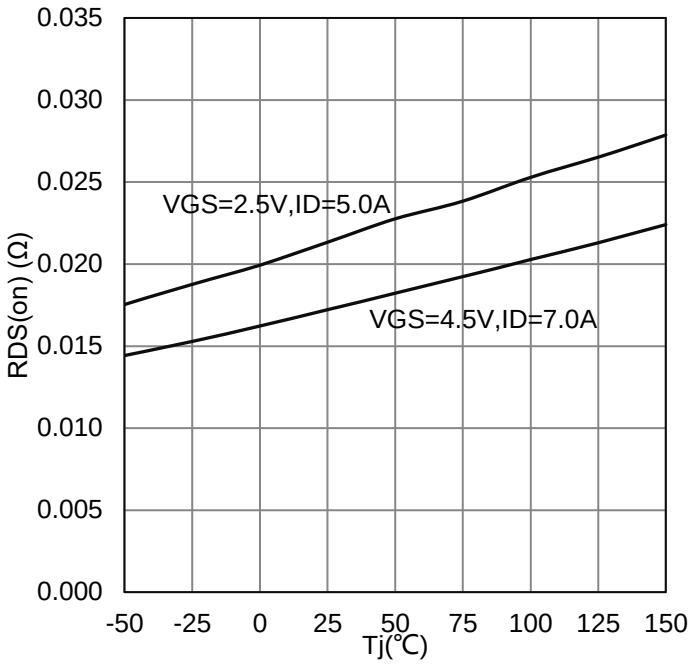


RDS(on) vs. ID

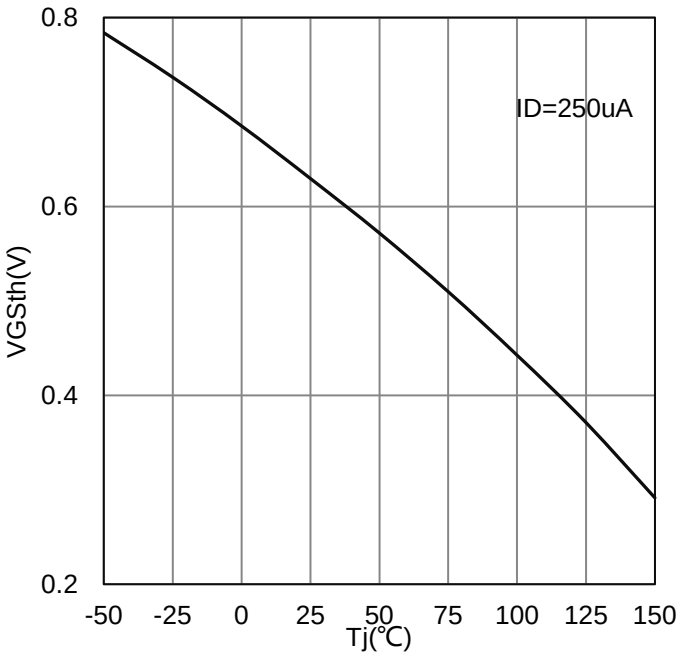
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



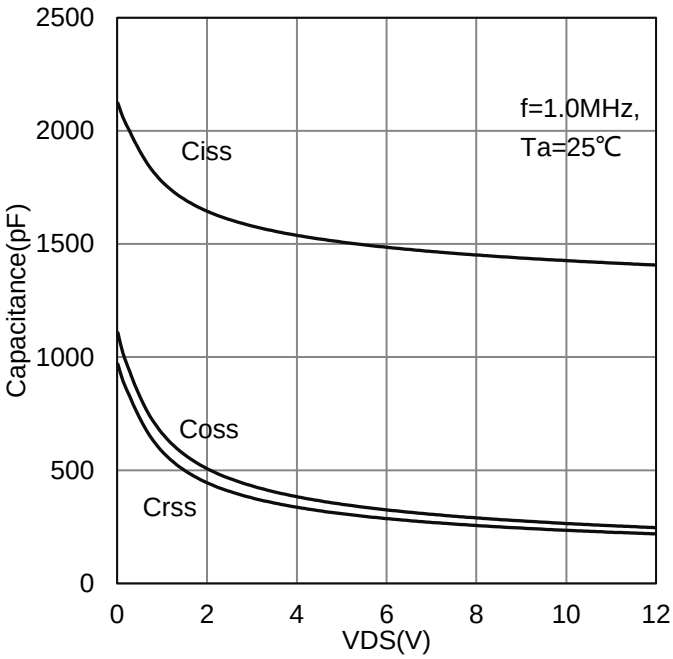
RDS(on) vs. VGS



RDS(on) vs. Tj

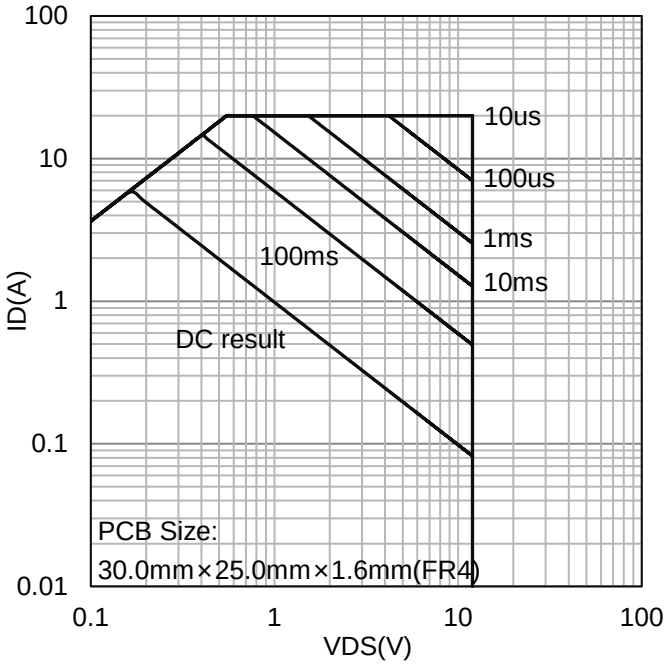


VGSth vs. Tj

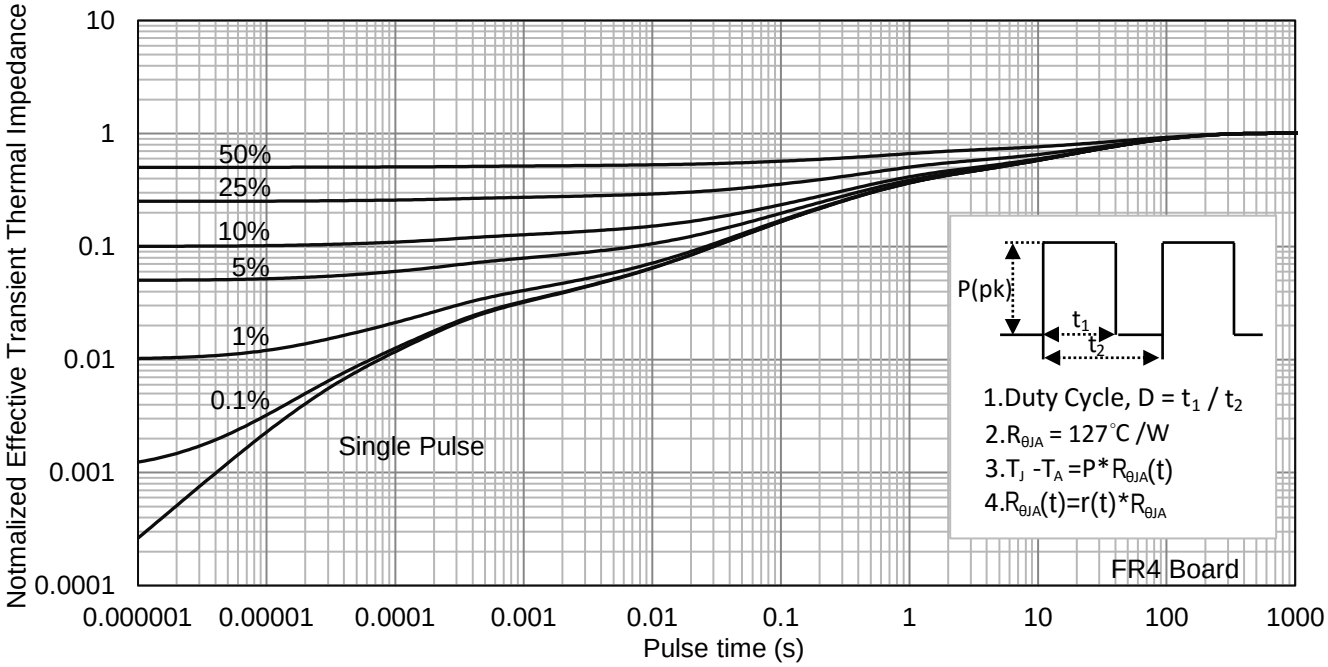


Capacitance

7. ELECTRICAL CHARACTERISTICS CURVES(Con.)

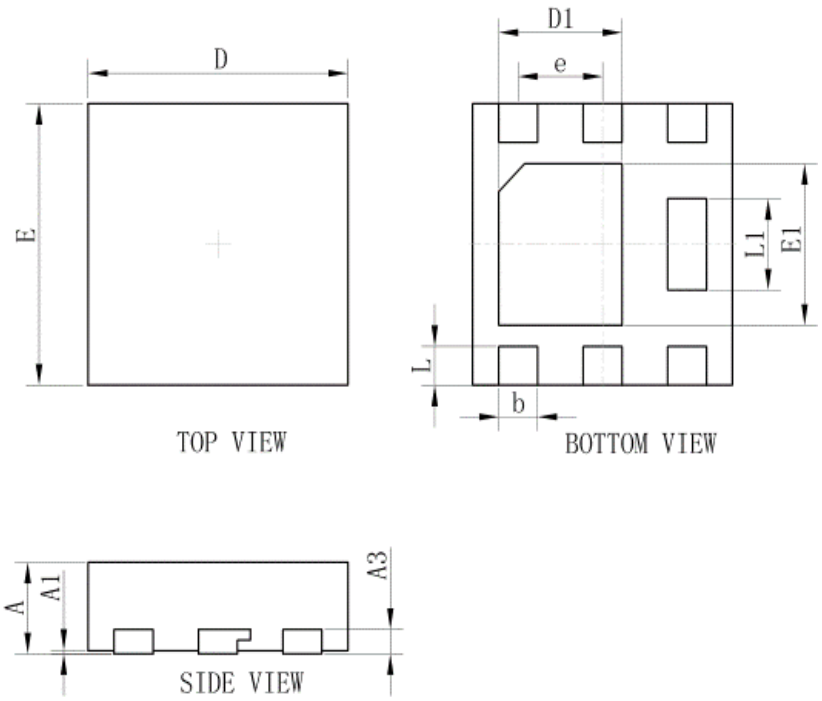


Safe Operating Area



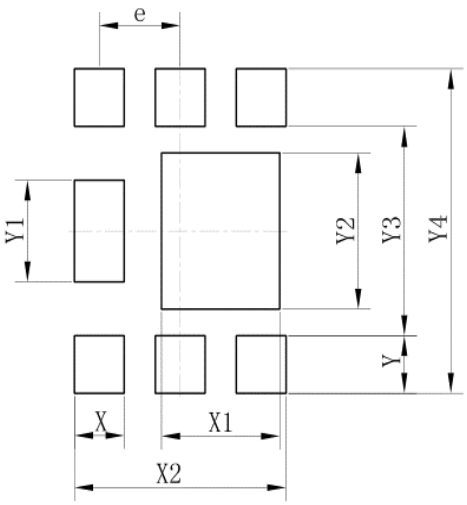
Thermal Response

8.OUTLINE AND DIMENSIONS



DFN2020-6S			
DIM	MIN	NOR	MAX
A	0.60	0.65	0.70
A1	0.01	0.03	0.05
b	0.25	0.30	0.35
D	1.95	2.00	2.05
E	1.95	2.00	2.05
e	0.65TYP.		
L	0.23	0.28	0.33
L1	0.60	0.65	0.70
D1	0.90	0.95	1.00
E1	1.10	1.15	1.20
A3	0.152REF		
All Dimensions in mm			

9.SOLDERING FOOTPRINT



DFN2020-6S	
Dim	(mm)
X	0.40
X1	0.95
X2	1.70
e	0.65
Y	0.43
Y1	0.75
Y2	1.15
Y3	1.54
Y4	2.39

DISCLAIMER

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.

- Before you use our Products for new Project, you are requested to carefully read this document and fully under--stand its contents. LRC shall not be in any way responsible or liable for failure, malfunction or accident arising from the use of any LRC’s Products against warning, caution or note contained in this document.

- All information contained in this document is current as of the issuing date and subject to change without any prior notice. Before purchasing or using LRC's Products,please confirm the latest information with a LRC sales represe--ntative.