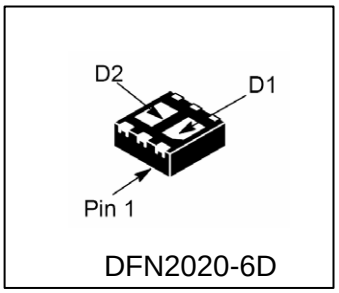
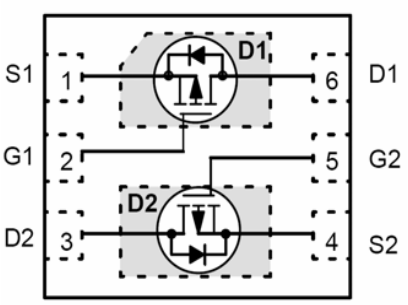
LDP2010DT1G
S-LDP2010DT1G

20V P-Channel Enhancement-Mode MOSFET



DFN2020-6D



1. FEATURES

- VDS = -20V
- RDS(ON),VGS@-4.5V,IDS@-4.7A=70mΩ
- RDS(ON),VGS@-2.5V,IDS@-1.0A=80mΩ
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.
- ESD rating of class 0 (<100V)per Human Body Model

2. APPLICATIONS

- Advanced trench process technology
- High density cell design for ultra low on-resistance.

3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LDP2010DT1G	P14	4000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC)

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	VDSS	-20	V
Gate–to–Source Voltage – Continuous	VGS	±12	V
Drain Current – Continuous TA = 25°C – Pulsed (Note 1)	 ID IDM	 -4.7 -20	A

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Power Dissipation	PD	1.1	W
Thermal Resistance, Junction–to–Ambient(Note 2)	RΘJA	110	ºC/W
Junction and Storage temperature	TJ,Tstg	−55~+150	° C

1.Repetitive Rating: Pulse width limited by the maximum junction temperature.

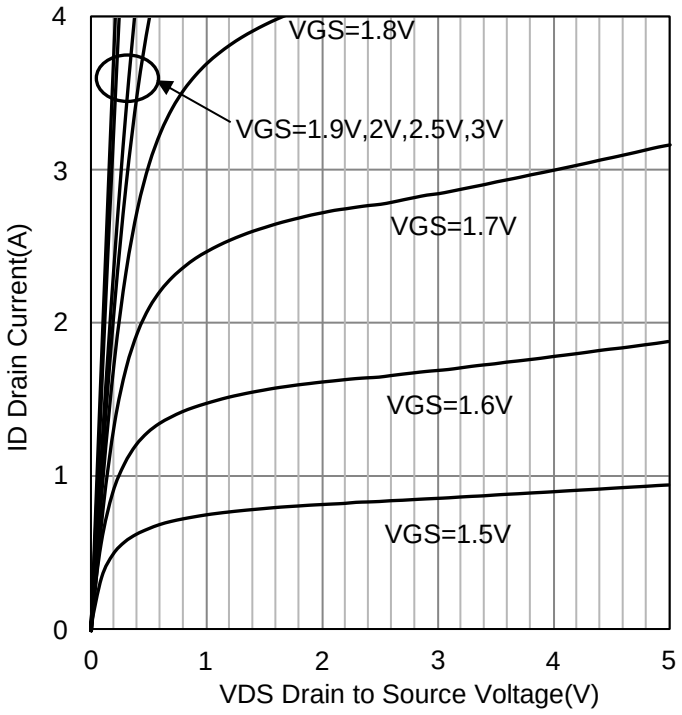
2.1-in² 2oz Cu PCB board.

6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

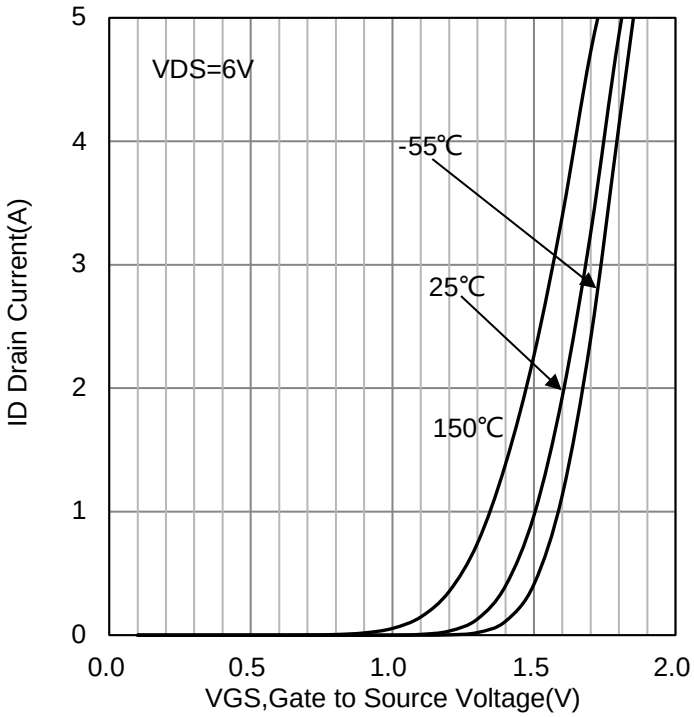
Characteristic		Symbol	Min.	Typ.	Max.	Unit
Static						
Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA)		VBRDSS	-20	-	-	V
Gate Threshold Voltage (VDS = VGS, ID = -250μA)		VGS(th)	-0.6	-0.85	-1.4	V
Zero Gate Voltage Drain Current (VGS = 0, VDS = -20 V)		IDSS	-	-	-1	μA
Gate–Body Leakage Current, Forward (VGS = 12 V)		IGSSF	-	-	100	nA
Gate–Body Leakage Current, Reverse (VGS = - 12 V)		IGSSR	-	-	-100	nA
Static Drain–Source On–State Resistance (VGS = -4.5V, ID = -4.7A) (VGS = -2.7V, ID = -3.8A) (VGS = -2.5V, ID = -1.0A)		RDS(on)	- - -	58 63 75	70 75 80	mΩ
Dynamic(Note 4)						
Total Gate Charge	(VDS = -10 V, VGS = -4.5 V,ID = -1 A)	Qg	-	7.5	-	nC
Gate to Source Charge		Qgs	-	1.1	-	
Gate to Drain Charge		Qgd	-	2	-	
Turn-on Delay Time	(VDS=-10V, ID=-1A,VGEN =-4.5V,RG= 6.2Ω)	td(on)	-	17	26	nS
Rise Time		tr	-	24	36	
Turn-Off Delay Time		td(off)	-	68	102	
Fall Time		tf	-	30	45	
Input Capacitance	(VDS=-10 V, VGS=0 V, f=1MHz)	Ciss	-	800	-	pF
Output Capacitance		Coss	-	85	-	
Reverse Transfer Capacitance		Crss	-	78	-	
Gate-Resistance (VDS = 0 V, VGS = 0 V, f = 1 MHz)		Rg	-	6.6	-	Ω
Source-Drain DIODE Ratings and Characteristics(TA= 25° C)						
Reverse Recovery Time (IF=-0.9A, di/dt=13A/μs)		trr	-	14	-	nS
Reverse Recovery Charge (IF=-0.9A, di/dt=13A/μs)		Qrr	-	0.5	-	nC

3.Pulse test: PW≤300us duty cycle ≤ 2%.
4.Guaranteed by design, not subject to production testing.

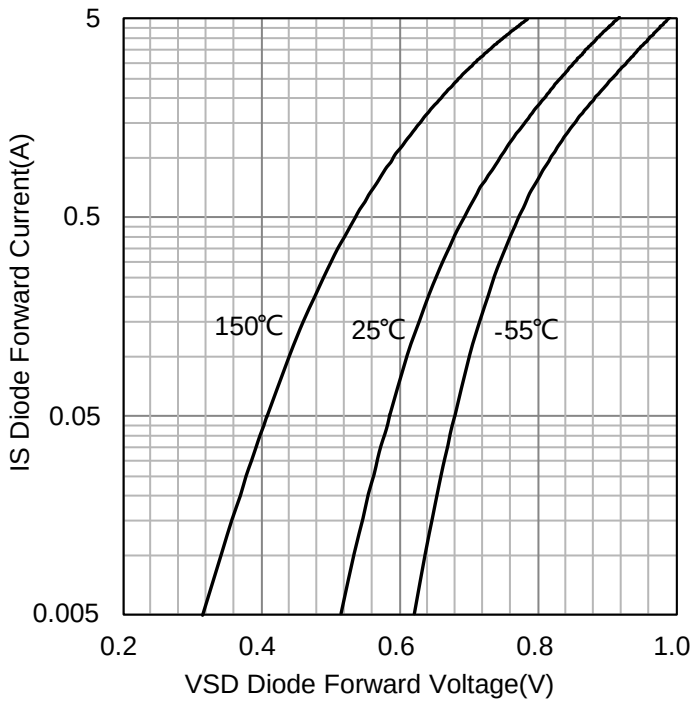
7. ELECTRICAL CHARACTERISTICS CURVES



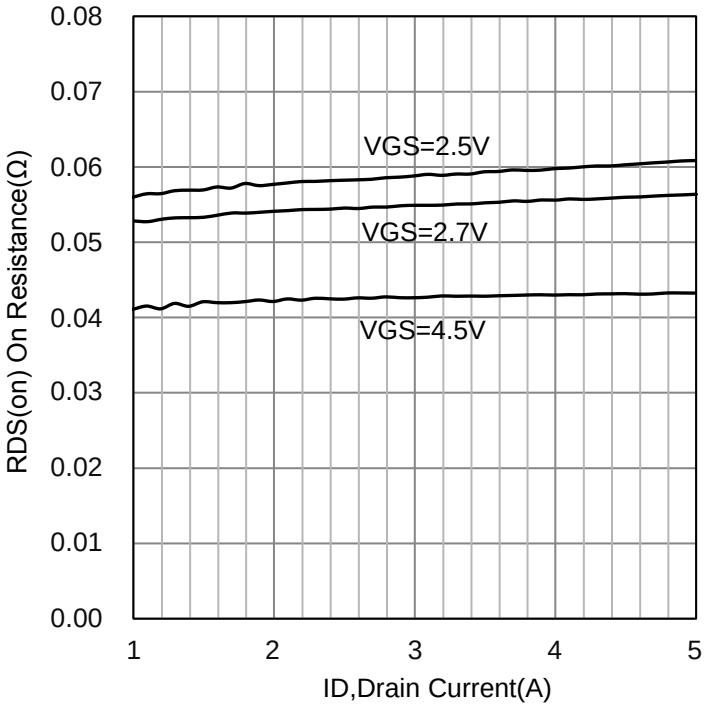
ID vs. VDS



ID vs. VGS

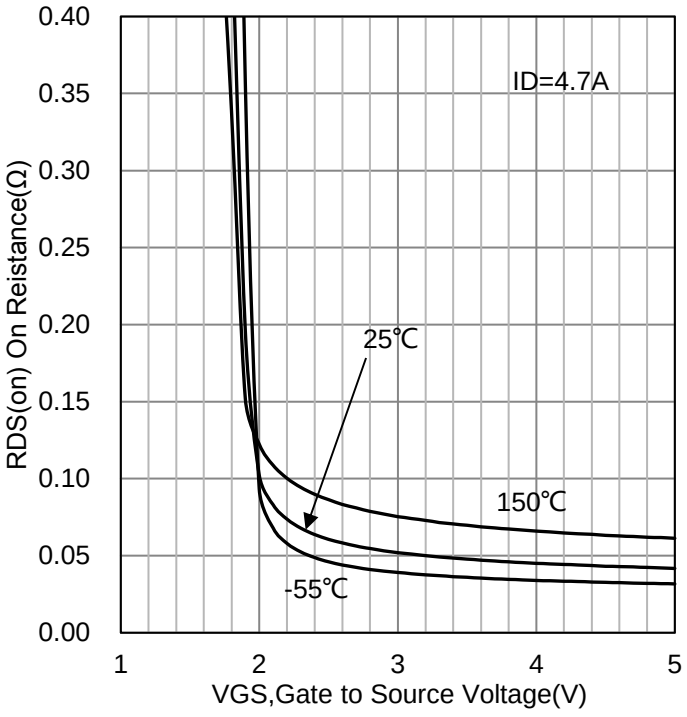


IS vs. VSD

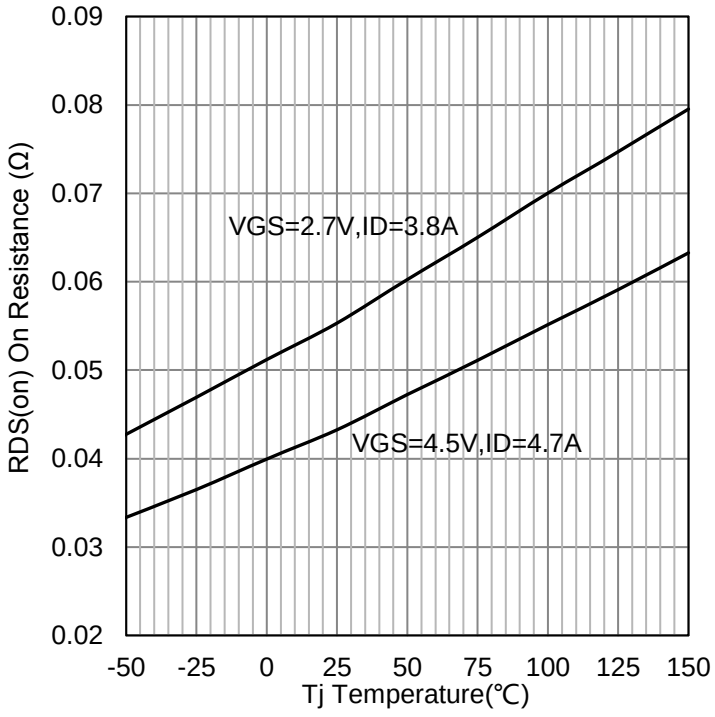


RDS(on) vs. ID

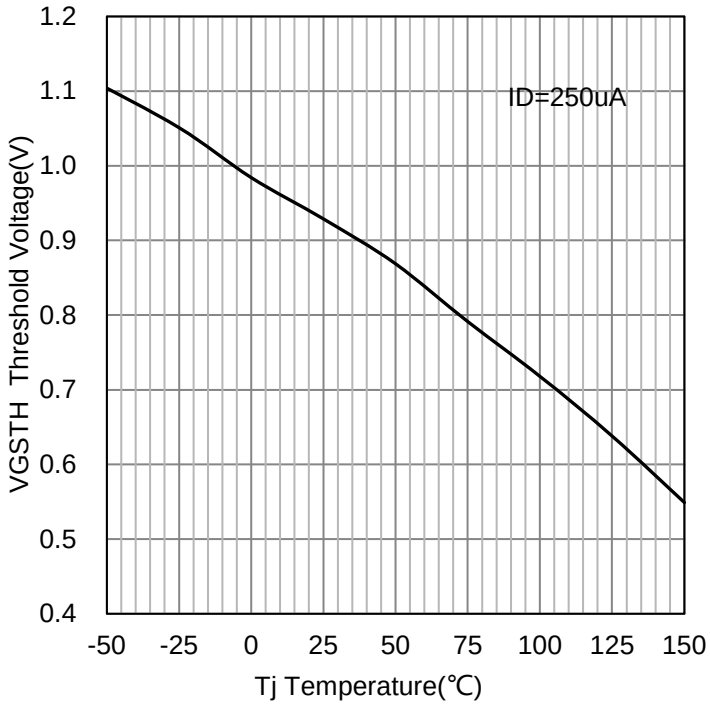
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



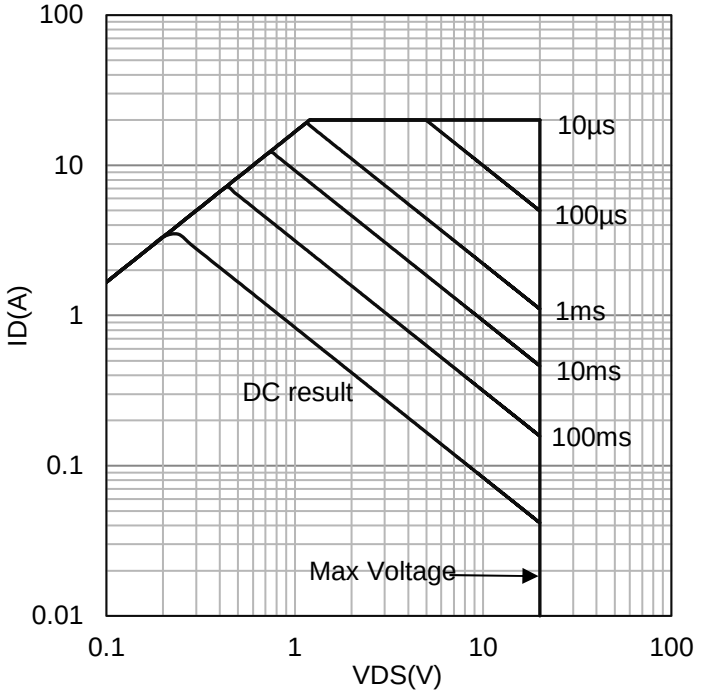
RDS(on) vs. VGS



RDS(on) vs. Tj



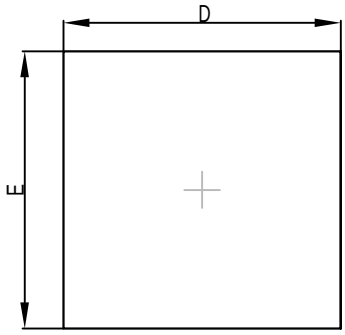
VGSTH vs. Tj



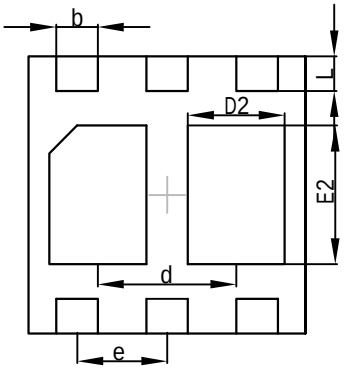
Safe Operating Area

8.OUTLINE AND DIMENSIONS (Unit:mm)

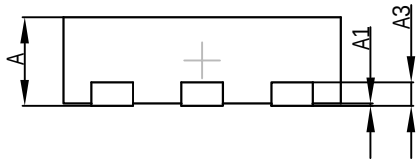
DFN2020 6D



TOP VIEW



BOTTOM VIEW

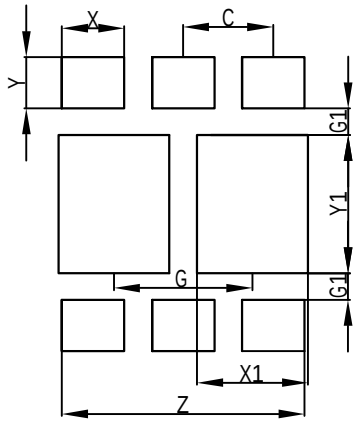


SIDE VIEW

DFN2020 6D			
Dim	Min	Typ	Max
D	1.95	2.00	2.05
E	1.95	2.00	2.05
e	-	0.65	-
L	0.20	0.25	0.30
b	0.25	0.30	0.35
d	-	1.00	-
A	0.60	0.65	0.70
A1	0	0.02	0.05
A3	-	0.152	-
E2	0.95	1.00	1.05
D2	0.65	0.70	0.75
All Dimensions in mm			

9.SOLDERING FOOTPRINT

DFN2020 6D



Dimensions	(mm)
X	0.45
Y	0.37
X1	0.80
Y1	1.00
C	0.65
G	1.00
G1	0.19
Z	1.75