

# LDP3415EDT2AG

## 20V P-Channel Enhancement-Mode MOSFET

### 1. FEATURES

- $V_{DS} = -20V$
- $R_{DS(ON)}, V_{GS}@-4.5V, I_{DS}@-4A=60m\Omega$
- $R_{DS(ON)}, V_{GS}@-2.5V, I_{DS}@-4A=75m\Omega$
- $R_{DS(ON)}, V_{GS}@-1.8V, I_{DS}@-2A=85m\Omega$
- We declare that the material of product compliance with RoHS requirements and Halogen Free.

### 2. APPLICATIONS

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

### 3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LDP3415EDT2AG	20V	4000/Tape&Reel

### 4. MAXIMUM RATINGS( $T_a = 25^\circ C$ )

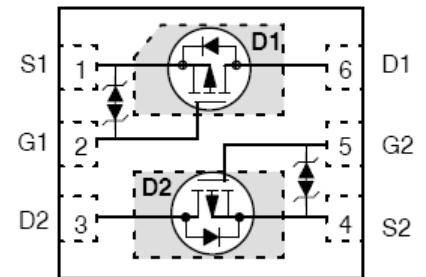
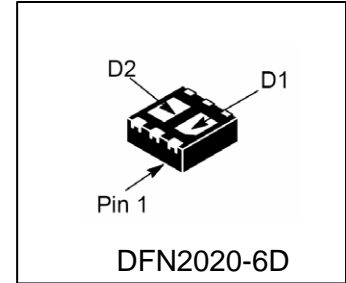
Parameter	Symbol	Limits	Unit
Drain–Source Voltage	$V_{DS}$	-20	V
Gate–to–Source Voltage – Continuous	$V_{GS}$	$\pm 8$	V
Drain Current			A
– Continuous $T_A = 25^\circ C$	$I_D$	-4	
– Pulsed (Note 1)	$I_{DM}$	-30	

### 5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Power Dissipation	PD	1.1	W
Thermal Resistance, Junction–to–Ambient(Note 2)	$R_{\theta JA}$	110	$^\circ C/W$
Junction and Storage temperature	$T_J, T_{stg}$	$-55 \sim +150$	$^\circ C$

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

2.1-in<sup>2</sup> 2oz Cu PCB board.



## 6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

### STATIC CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA)	VBRDSS	-20	-	-	V
Zero Gate Voltage Drain Current (VGS = 0, VDS = -16 V)	IDSS	-	-	-1	μA
Gate–Body Leakage Current, Forward (VGS = 8 V)	IGSSF	-	-	10	μA
Gate–Body Leakage Current, Reverse (VGS = - 8 V)	IGSSR	-	-	-10	μA
Gate Threshold Voltage (VDS = VGS, ID = -250μA)	VGS(th)	-0.3	-	-1.0	V
Static Drain–Source On–State Resistance (VGS = -4.5V, ID = -4A) (VGS = -2.5V, ID = -4A) (VGS = -1.8V, ID = -2.0A)	RDS(on)	-	-	60 75 85	mΩ

### DYNAMIC CHARACTERISTICS(Note 3)

Total Gate Charge (VDS=-10V, ID = -4A, VGS = -4.5V)	Qg	-	11.4	14.82	nC
Gate-Source Charge (VDS=-10V, ID = -4A, VGS = -4.5V)	Qgs	-	2.14	2.78	nC
Gate-Drain Charge (VDS=-10V, ID = -4A, VGS = -4.5V)	Qgd	-	2.51	3.26	nC
Input Capacitance (VDS = -10V, f=1.0MHz, VGS = 0V)	Ciss	-	1140	-	pF
Output Capacitance (VDS = -10V, f=1.0MHz, VGS = 0V)	Coss	-	98	-	pF
Reverse Transfer Capacitance (VDS = -10V, f=1.0MHz, VGS = 0V)	Crss	-	95	-	pF

### SWITCHING CHARACTERISTICS

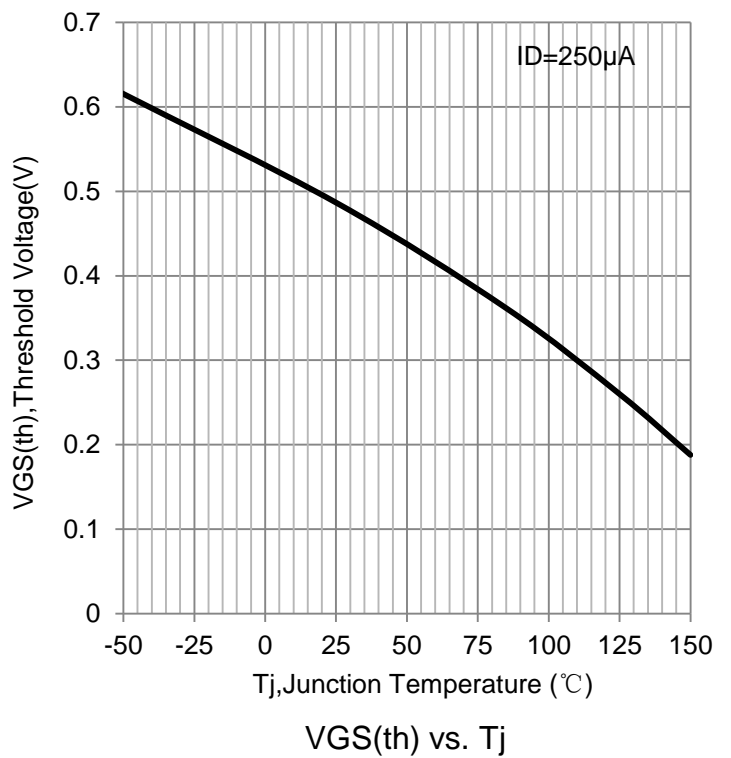
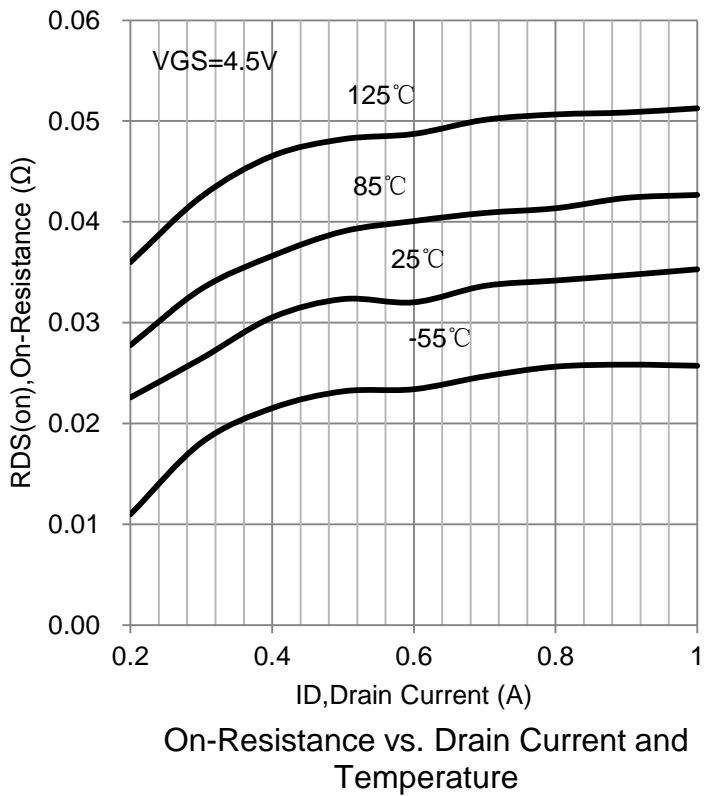
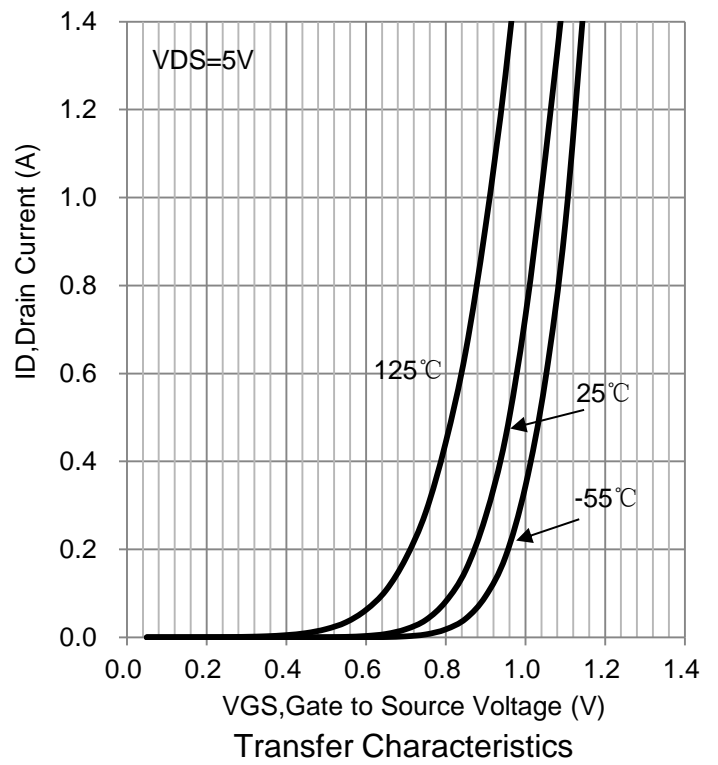
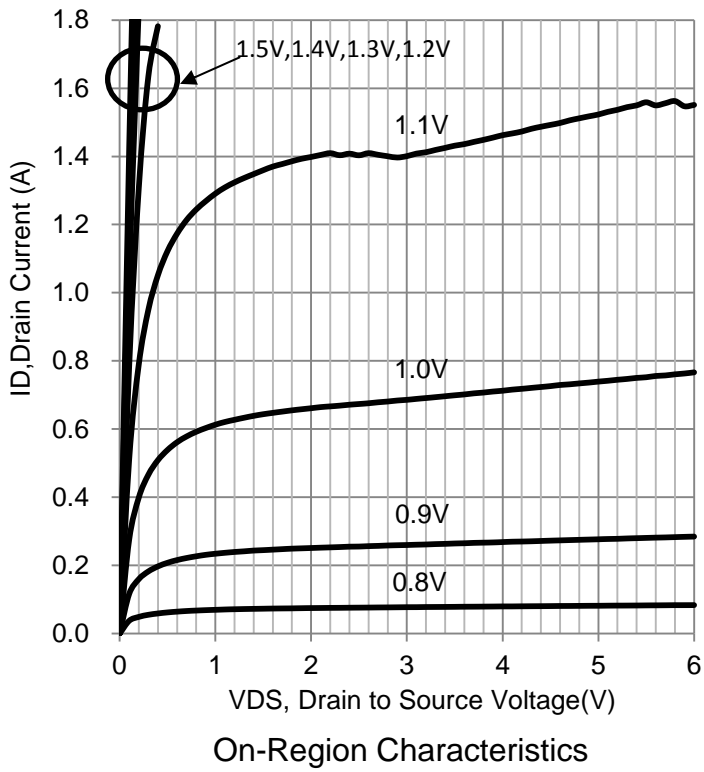
Turn-On Delay Time	(VDD = -10V, RL=2.5Ω ID = -1A, VGEN = -4.5V, RG = 3Ω)	td(on)	-	965.2	1930.4	ns
Rise Time		tr	-	1604	3208	
Turn-Off Delay Time		td(off)	-	7716	15432	
Fall Time		tf	-	3452	6904	

### SOURCE–DRAIN DIODE CHARACTERISTICS

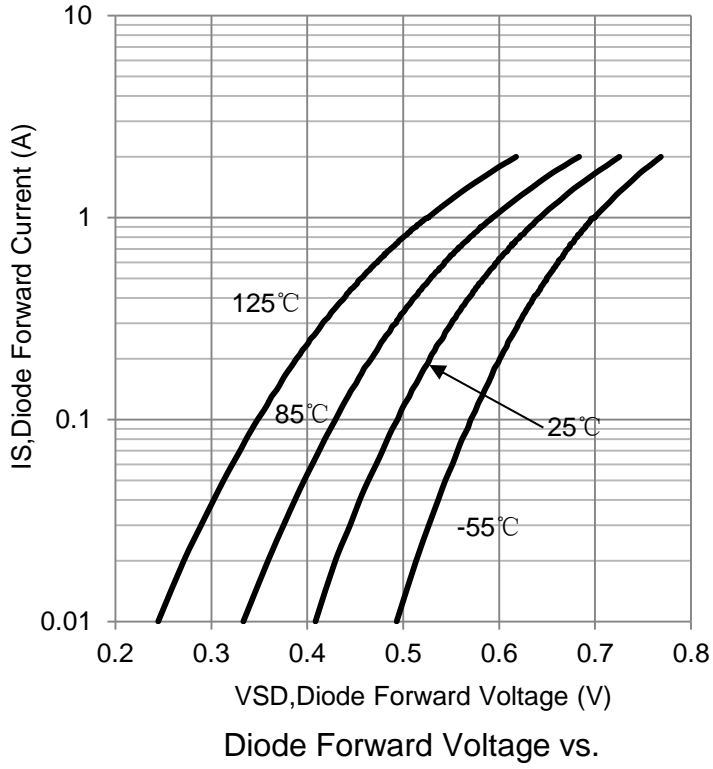
Forward Voltage (VGS = 0 V, ISD = -1.0 A)	VSD	-	-	-1	V
Max.Forward Current	IS	-	-	-2.2	A

3.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

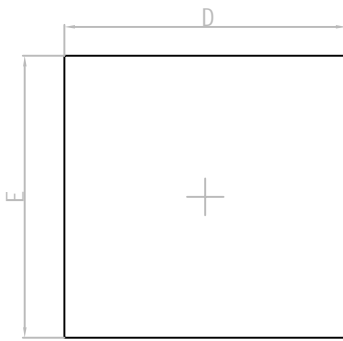
**7. ELECTRICAL CHARACTERISTICS CURVES**



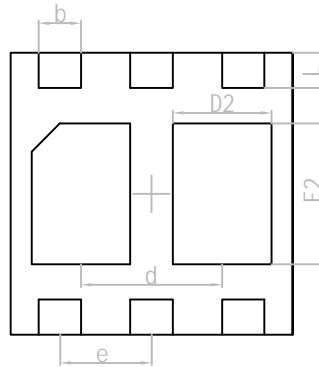
**7. ELECTRICAL CHARACTERISTICS CURVES (Con.)**



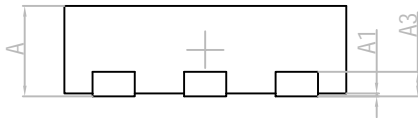
### 8. OUTLINE AND DIMENSIONS



TOP VIEW

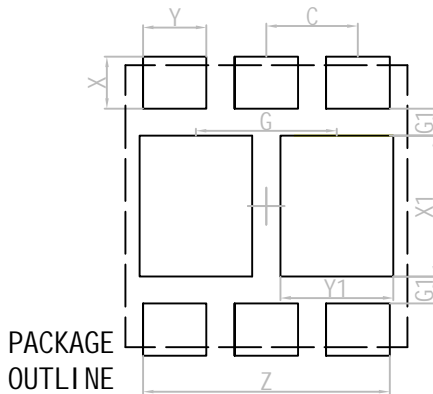


BOTTOM VIEW



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



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