

# N3415D

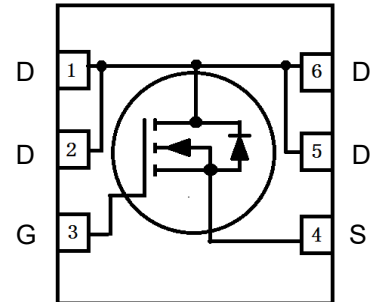
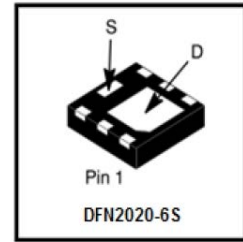
## 30V N-Channel Enhancement MOSFET

### 1. FEATURES

- VDS = 30 V
- Low RDS(ON) trench technology
- 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
- Motor Drives



### 3. ORDERING INFORMATION

Device	Marking	Shipping
N3415D	N5S	4000/Tape&Reel

### 4. MAXIMUM RATINGS(Ta = 25°C unless otherwise stated)

Parameter		Symbol	Limits	Unit
Drain-to-Source Voltage		VDSS	30	V
Gate-to-Source Voltage		VGS	±20	V
Continuous Drain Current	TA =25°C	ID	8	A
	TA =100°C		6	
Pulsed Drain Current(Note 2)		IDM	32	A
Avalanche Current(L=0.1mH)		IAS	16	A
Avalanche Energy(L=0.1mH)		EAS	12.8	mJ
Power Dissipation	TA =25°C	PD	2.08	W
	TA =100°C		0.83	
Operating Junction and Storage Temperature Range		TJ , TSTG	-55 ~+150	°C

1. Duty cycle ≤1%
2. Pulse width limited by maximum junction temperature.
3. 60° C / W when mounted on a 1 in<sup>2</sup> pad of 2 oz copper.

### 5. THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Maximum Junction-to-Ambient	RθJA	60	°C/W
Maximum Junction-to-Case	RθJC	12	°C/W



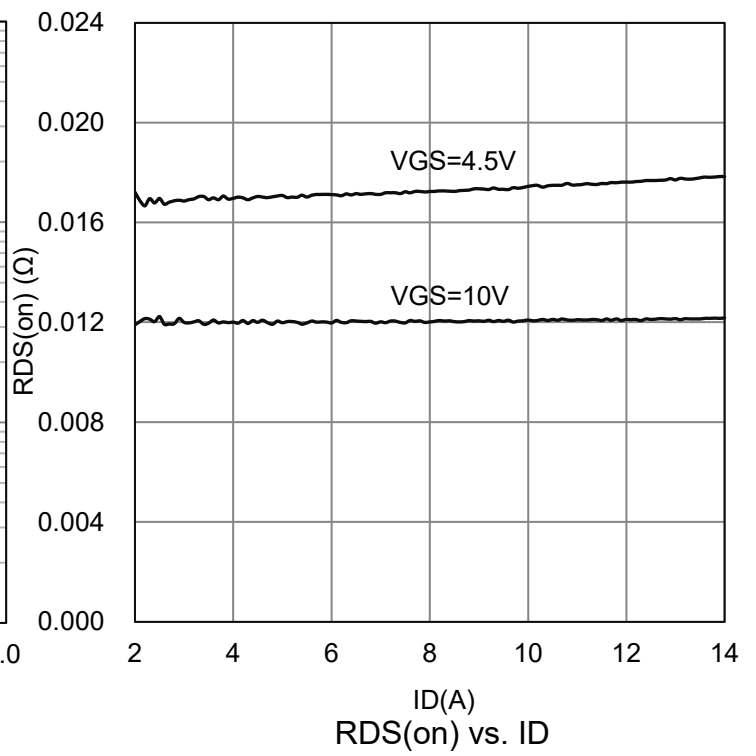
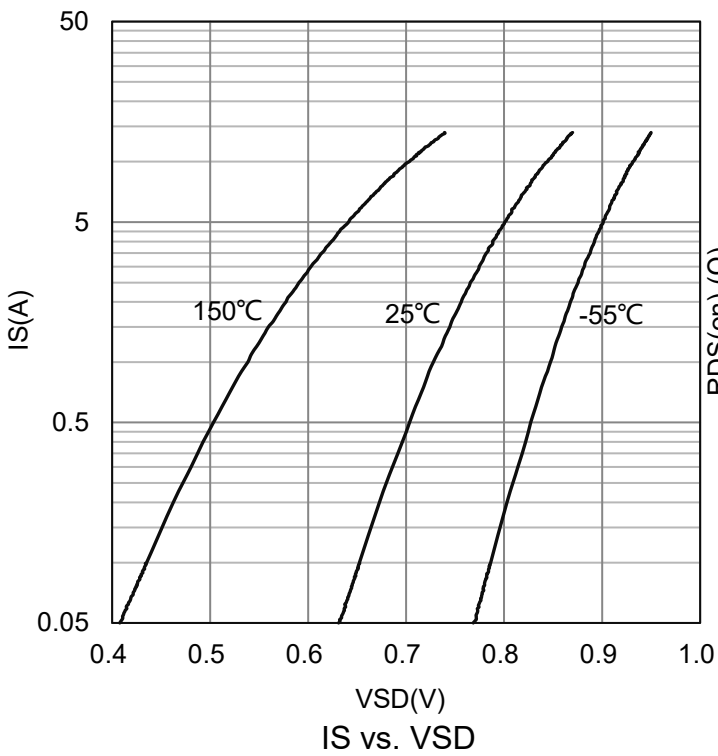
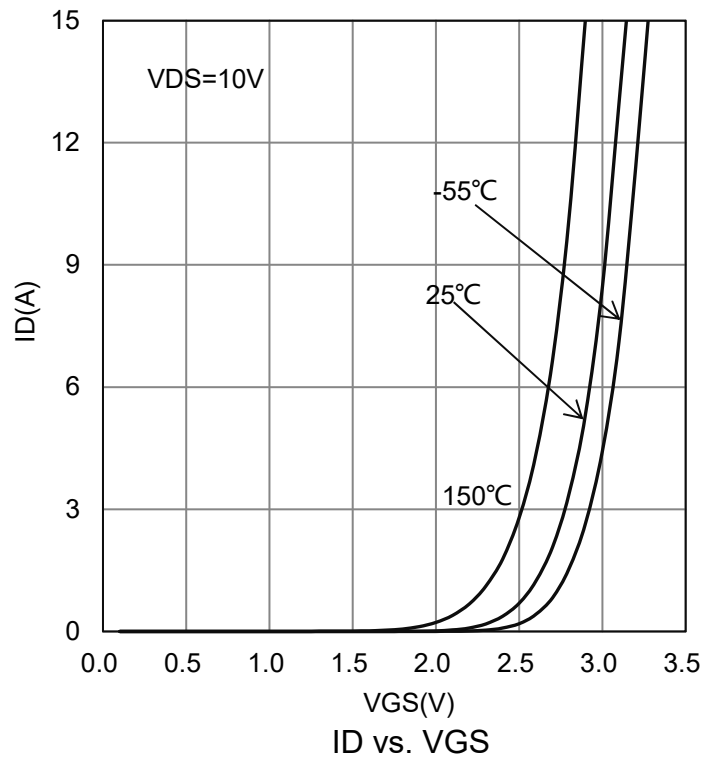
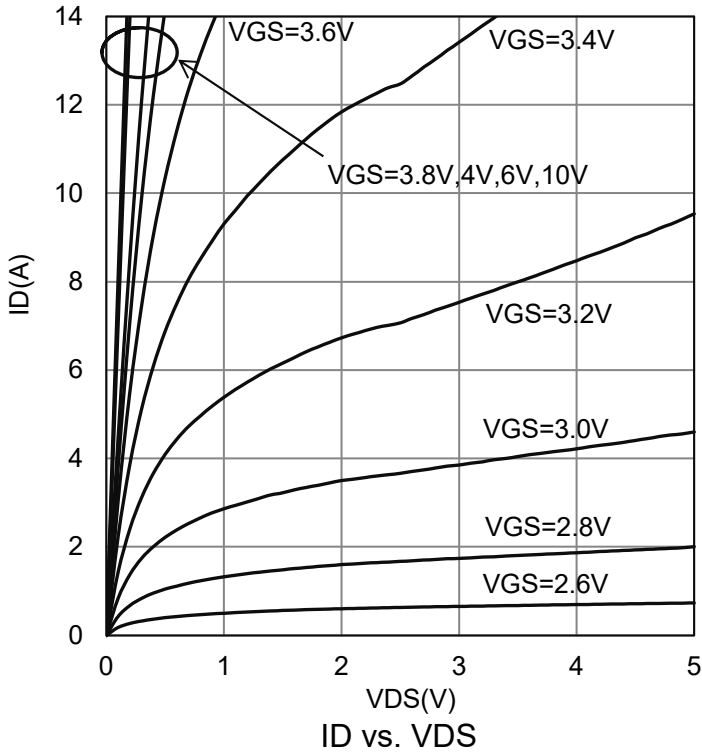
## 6. ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit		
Drain-Source Breakdown Voltage (VGS = 0V , ID = 250 uA)	V(BR)DSS	30	-	-	V		
Gate-Source Threshold Voltage (VDS = VGS , ID = 250 uA)	VGS(th)	1	1.5	3	V		
Gate-Body Leakage (VDS = 0 V, VGS = ±20 V)	IGSS	-	-	±100	nA		
Zero Gate Voltage Drain Current (VDS = 24 V, VGS = 0 V) (VDS = 20 V, VGS = 0 V, TJ = 125°C )	IDSS	-	-	1 25	μA		
Drain-Source On-Resistance(Note 4) (VGS = 10 V, ID = 8 A) (VGS = 4.5 V, ID = 5 A)	RDS(on)	-	12 18	15 24	mΩ		
Forward Transconductance(Note 4) (VDS = 5 V, ID = 8 A)	gfs	-	18	-	S		
Total Gate Charge	(VDS = 15 V, VGS = 4.5 V, ID = 6 A)	Qg	-	8.4	-	nC	
Gate-Source Charge			Qgs	-	2.6		-
Gate-Drain Charge			Qgd	-	3.8		-
Turn-On Delay Time	(VDS = 15 V, ID = 1A, VGEN = 10 V, RGS = 6 Ω)	td(on)	-	10	-	ns	
Rise Time			tr	-	8		-
Turn-Off Delay Time			td(off)	-	20		-
Fall Time			tf	-	10		-
Input Capacitance	(VDS = 15 V, VGS = 0 V, f = 1 MHz)	Ciss	-	741	-	pF	
Output Capacitance			Coss	-	115		-
Reverse Transfer Capacitance			Crss	-	99		-
Gate-Resistance (VGS = 0 V, VDS = 0V, f = 1MHz)	Rg	-	0.8	-	Ω		
Diode Forward Voltage(Note 4) (IF = IS , VGS = 0V)	VSD	-	0.7	1.2	V		

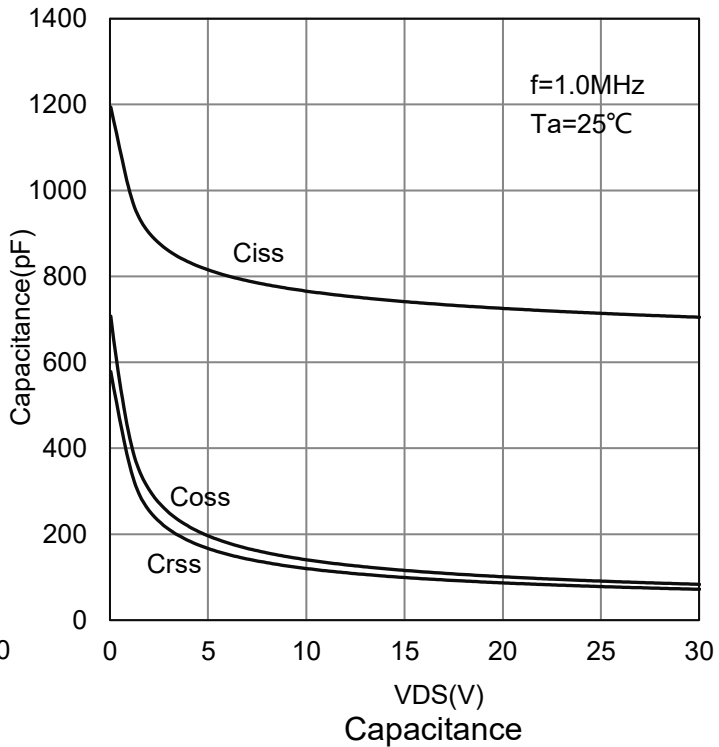
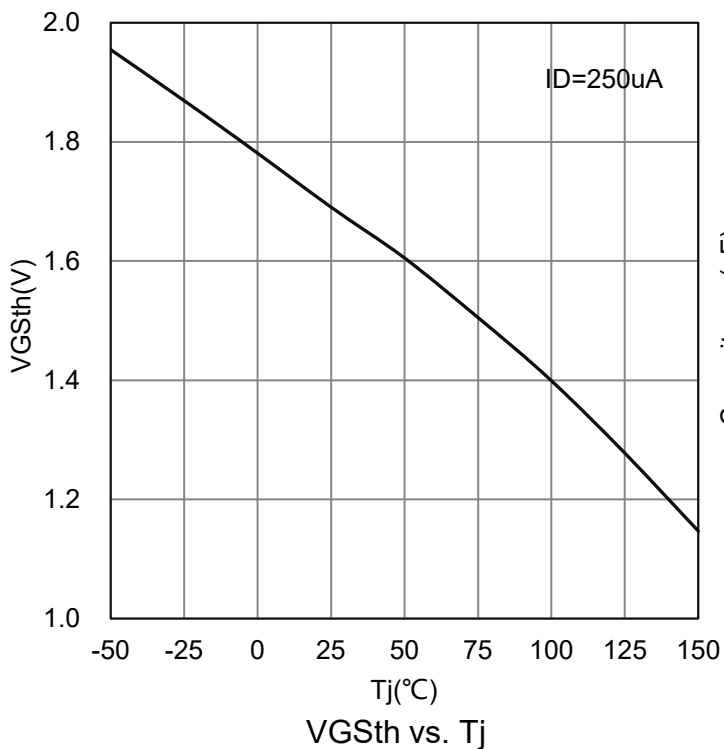
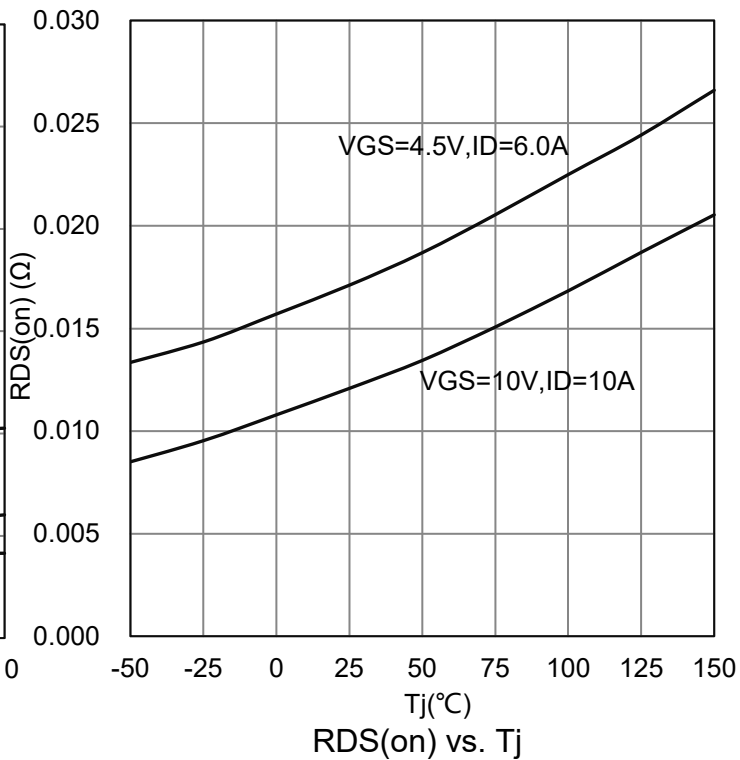
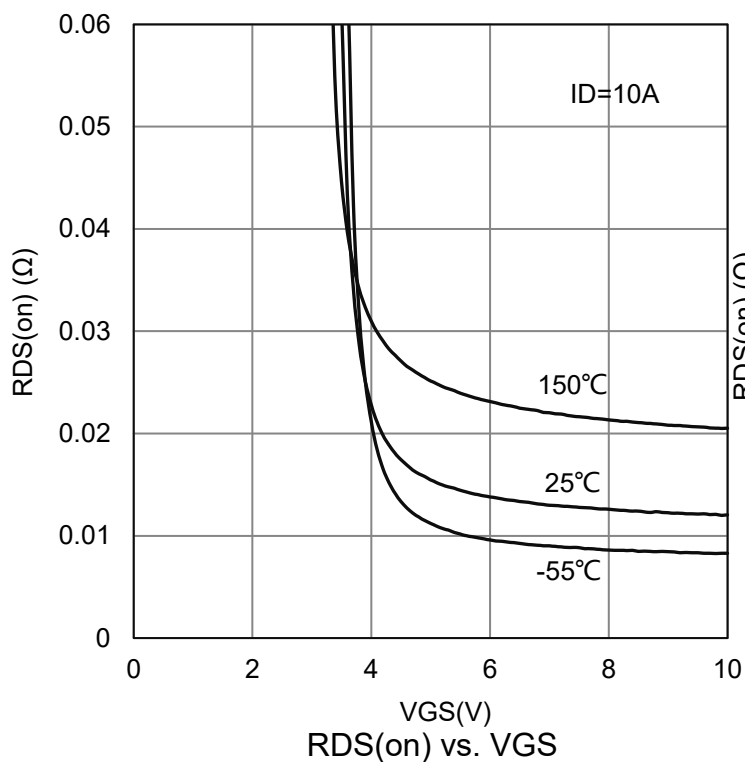
4. Pulse test:  $PW \leq 300\mu s$  duty cycle  $\leq 2\%$ .



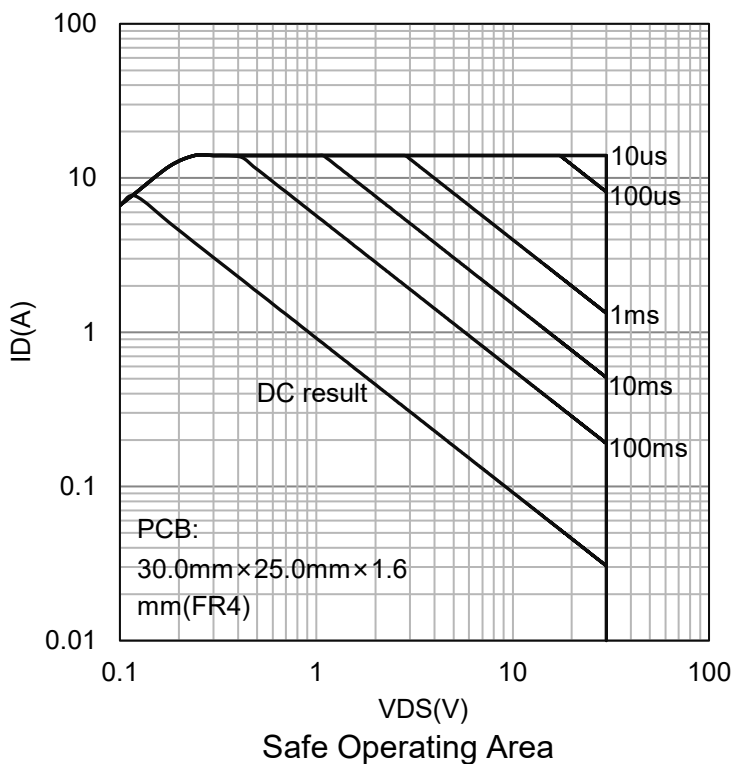
7.ELECTRICAL CHARACTERISTICS CURVES



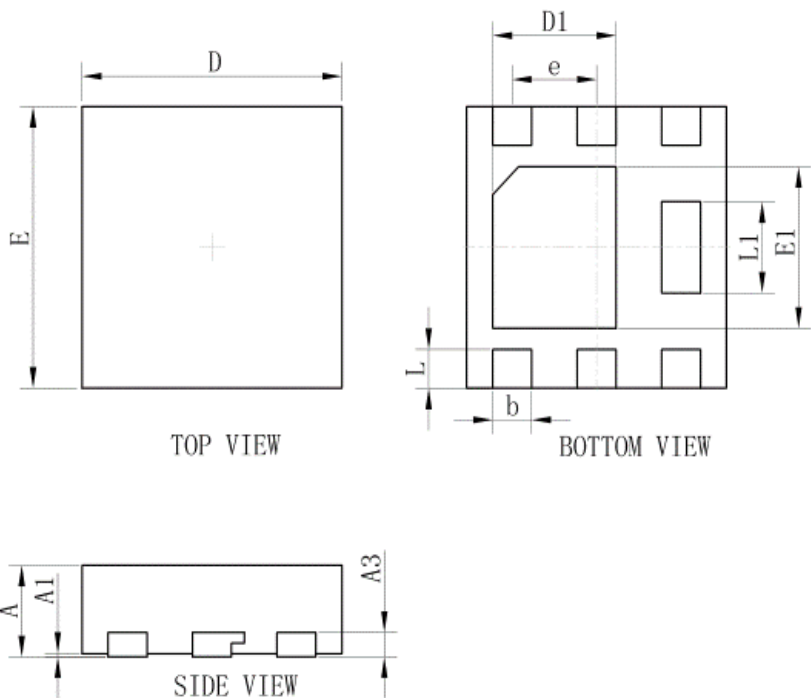
7.ELECTRICAL CHARACTERISTICS CURVES(Con.)



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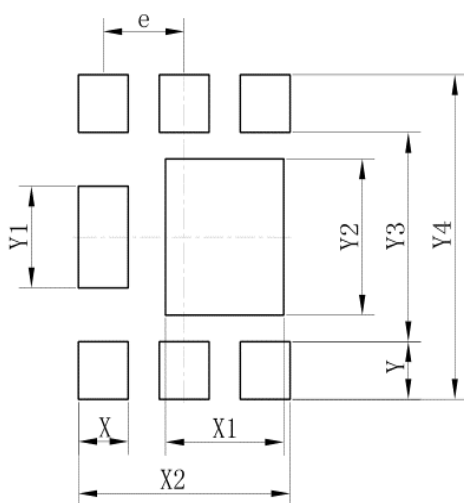


8.OUTLINE AND DIMENSIONS



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	0.65
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

