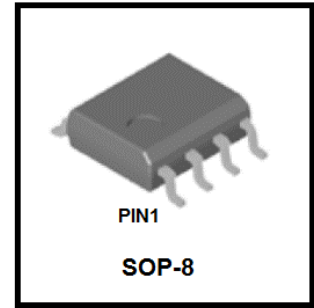


# LNP4338T1G

## P & N-Channel 30-V (D-S) MOSFET

### 1. FEATURES

- Low RDS(on) provides higher efficiency and extends battery life.
- Low thermal impedance.
- Fast switching speed.
- High performance trench technology
- We declare that the material of product are Halogen Free and compliance with RoHS requirements.

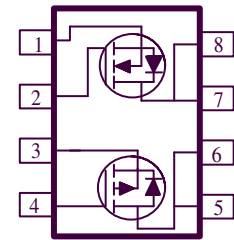


### 2. APPLICATION

- Power Routing
- DC/DC Conversion
- Motor Drives

### 3. ORDERING INFORMATION

Device	Marking	Shipping
LNP4338T1G	LNP4338	4000/Tape&Reel



### 4. MAXIMUM RATINGS(Ta = 25°C )

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-to-Source Voltage		VDS	30	30	V
Gate-to-Source Voltage		VGS	±20	±20	V
Continuous Drain Current(Note 1)	TA =25°C	ID	10	-9	A
	TA =70°C		7.8	-6.9	
Pulsed Drain Current (Note 2)		IDM	40	-35	A
Power Dissipation(Note 1)	TA =25°C	PD	2.1	2.1	W
	TA =70°C		1.3	1.3	
Operating Junction and Storage Temperature Range		TJ , TSTG	-55 ~+150	-55 ~+150	°C

### 5. THERMAL CHARACTERISTICS

Parameter		Symbol	Limits	Unit
Thermal Resistance,Junction-to-Ambient(Note 1)	t ≤10 s	RθJA	62.5	°C/W
	Steady State		110	°C/W

- 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

**6. P-ELECTRICAL CHARACTERISTICS (Ta= 25°C)**

Characteristic	Symbol	Min.	Typ.	Max.	Unit	
<b>STATIC</b>						
Drain-Source Breakdown Voltage (VGS = 0, ID = -250μA)	VBRDSS	-30	-	-	V	
Gate-Source Threshold Voltage (VDS =VGS , ID =-250μA)	VGS(th)	-1	-	-3	V	
Gate-Body Leakage Current (VDS =0V, VGS = -20V)	IGSS	-	-	± 1000	nA	
Zero Gate Voltage Drain Current (VDS = -24 V, VGS = 0 V)	IDSS	-	-	-1	μA	
Drain-Source On-Resistance(Note 3) (VGS = -10 V, ID = -6 A) (VGS = -4.5 V, ID = -4.9 A)	RDS(ON)	- -	21 32	26 39	mΩ	
<b>DYNAMIC</b>						
Total Gate Charge	(VDS = -15 V, VGS = -10 V, ID = -5.2 A)	Qg	-	21	-	nC
Gate-Source Charge		Qgs	-	2.4	-	
Gate-Drain Charge		Qgd	-	4.1	-	
Turn-On Delay Time	(VDS = -15 V, VGS=-10V, ID= -1A, RGEN=6 Ω)	td(on)	-	6	-	ns
Rise Time		tr	-	5	-	
Turn-Off Delay Time		td(off)	-	53.6	-	
Fall Time		tf	-	21	-	
Input Capacitance	(VDS = 30 V, VGS = 0 V, f = 1 MHz)	Ciss	-	1323	-	pF
Output Capacitance		Coss	-	135	-	
Reverse Transfer Capacitance		Crss	-	116	-	

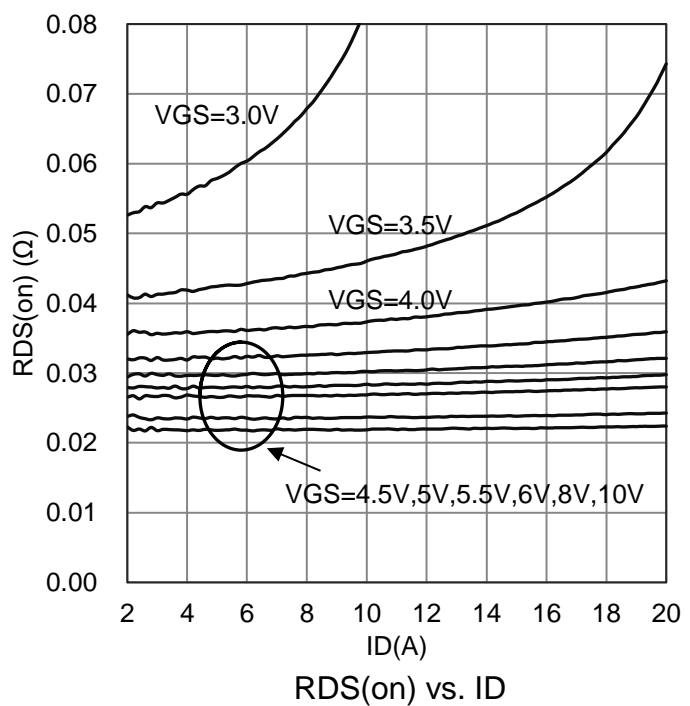
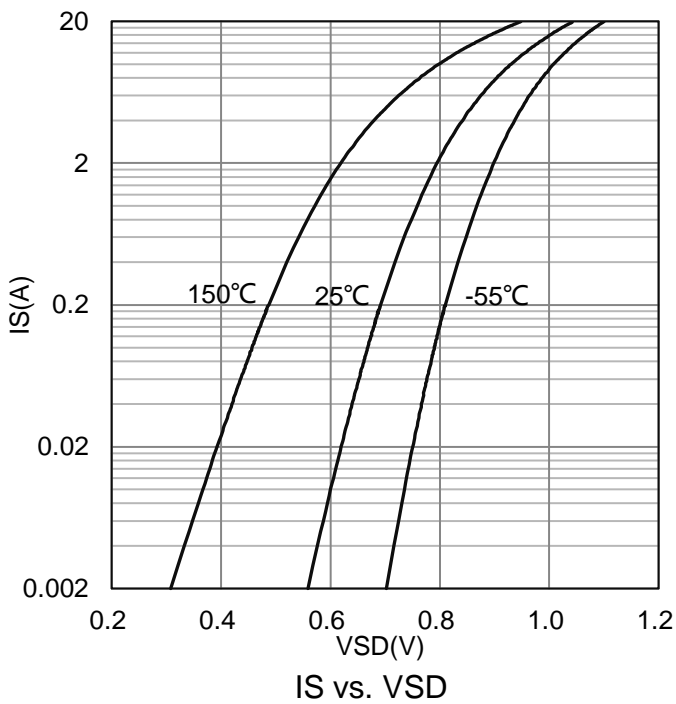
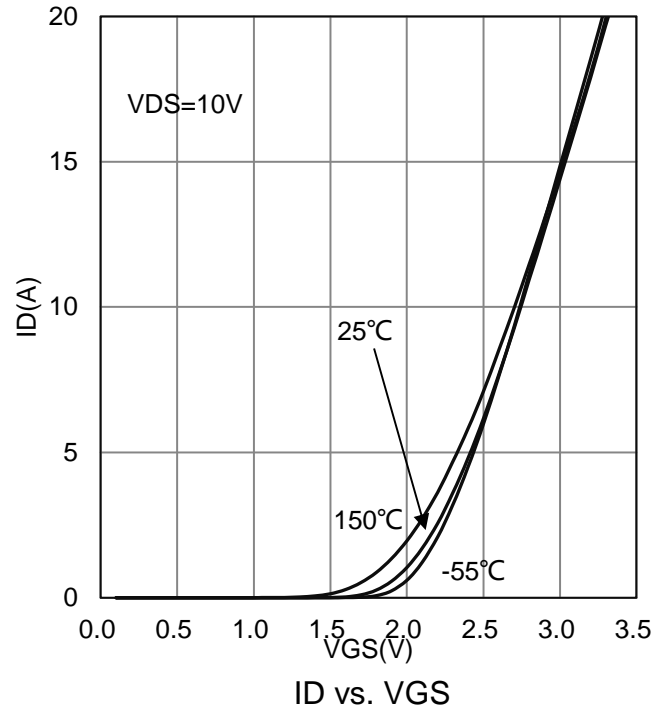
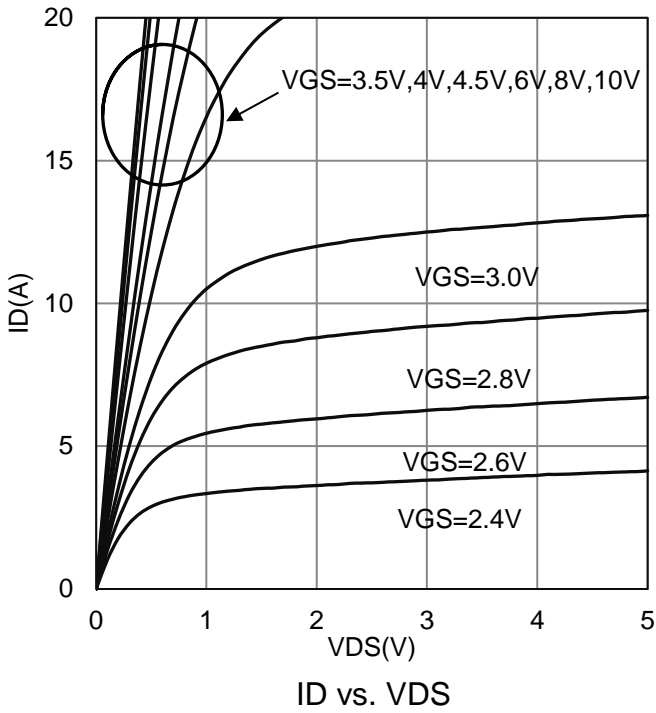
3. Pulse test; pulse width ≤ 300μs, duty cycle ≤ 2%

**6. N-ELECTRICAL CHARACTERISTICS (Ta= 25°C)**

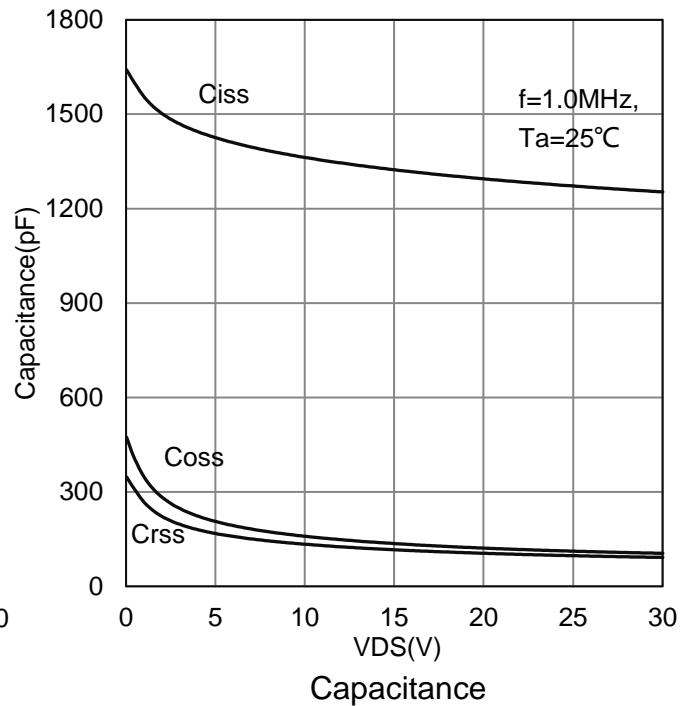
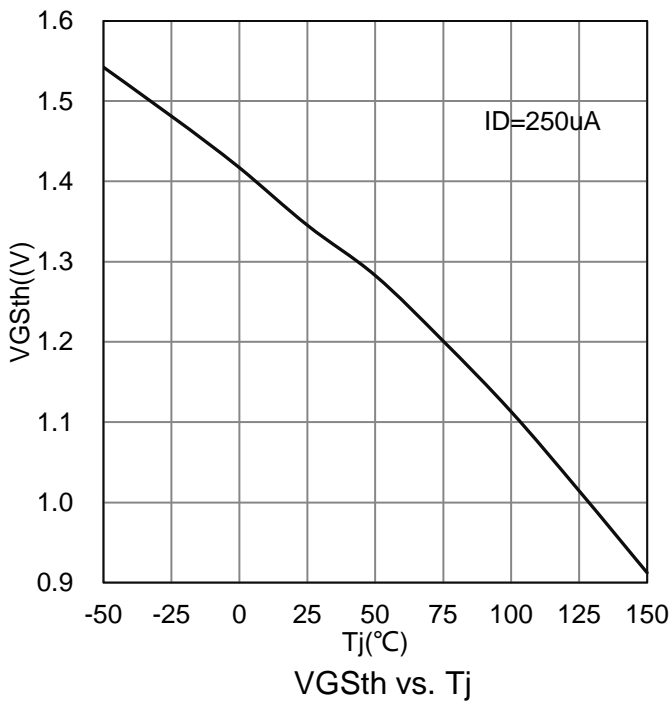
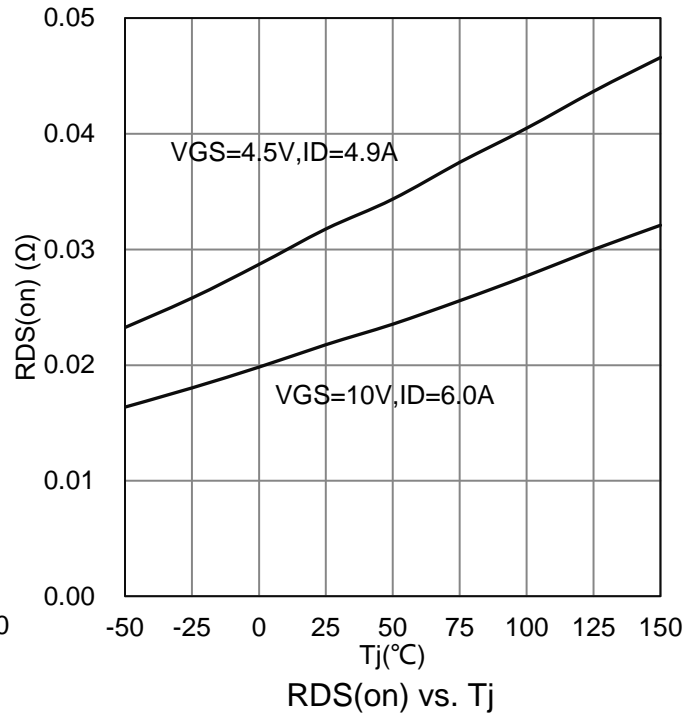
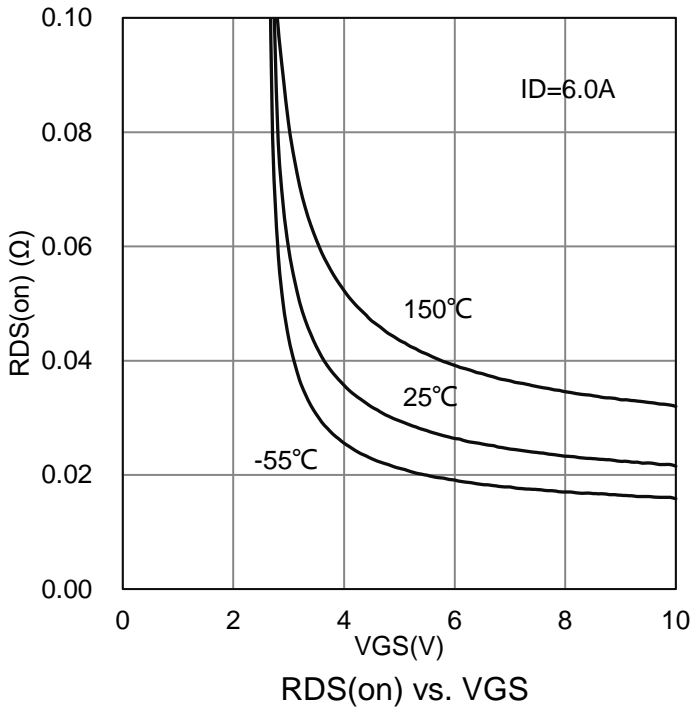
Characteristic	Symbol	Min.	Typ.	Max.	Unit	
<b>STATIC</b>						
Drain-Source Breakdown Voltage (VGS = 0, ID = 250μA)	VBRDSS	30	-	-	V	
Gate-Source Threshold Voltage (VDS =VGS , ID =250μA)	VGS(th)	1	-	3	V	
Gate-Body Leakage Current (VDS =0V, VGS = +20V)	IGSS	-	-	±1000	nA	
Zero Gate Voltage Drain Current (VDS = 24 V, VGS = 0 V)	IDSS	-	-	1	μA	
Drain-Source On-Resistance(Note 3) (VGS = 10 V, ID = 7.1 A) (VGS = 4.5 V, ID = 5.8 A)	RDS(ON)	- -	11 16	16 22	mΩ	
<b>DYNAMIC</b>						
Total Gate Charge	(VDS = 15 V, VGS = 10 V, ID = 6.9 A)	Qg	-	21	-	nC
Gate-Source Charge		Qgs	-	2.6	-	
Gate-Drain Charge		Qgd	-	4.4	-	
Turn-On Delay Time	(VDS = 15 V, VGS=10V, ID= 1 A, RGEN=6 Ω)	td(on)	-	6	-	ns
Rise Time		tr	-	6	-	
Turn-Off Delay Time		td(off)	-	29	-	
Fall Time		tf	-	8	-	
Input Capacitance	(VDS = 30 V, VGS = 0 V, f = 1 MHz)	Ciss	-	1235	-	pF
Output Capacitance		Coss	-	136	-	
Reverse Transfer Capacitance		Crss	-	119	-	

3. Pulse test; pulse width ≤ 300μs, duty cycle ≤ 2%

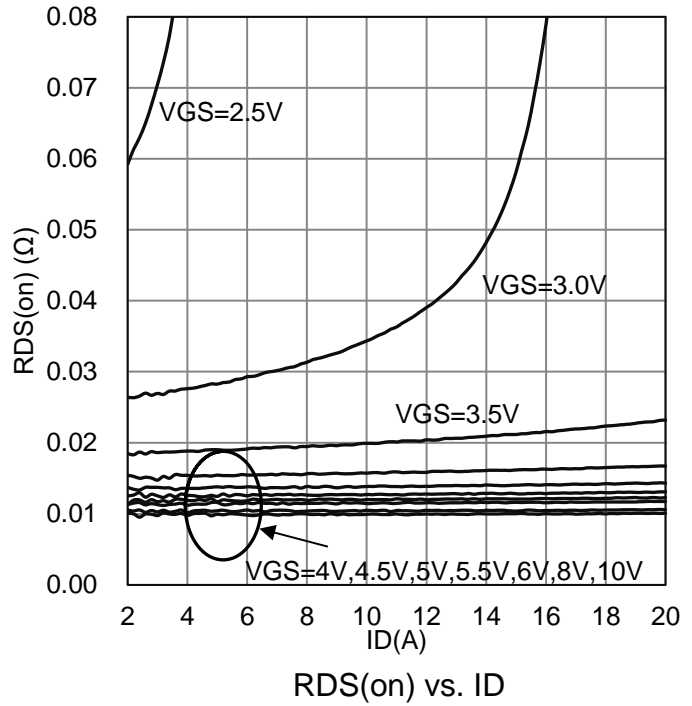
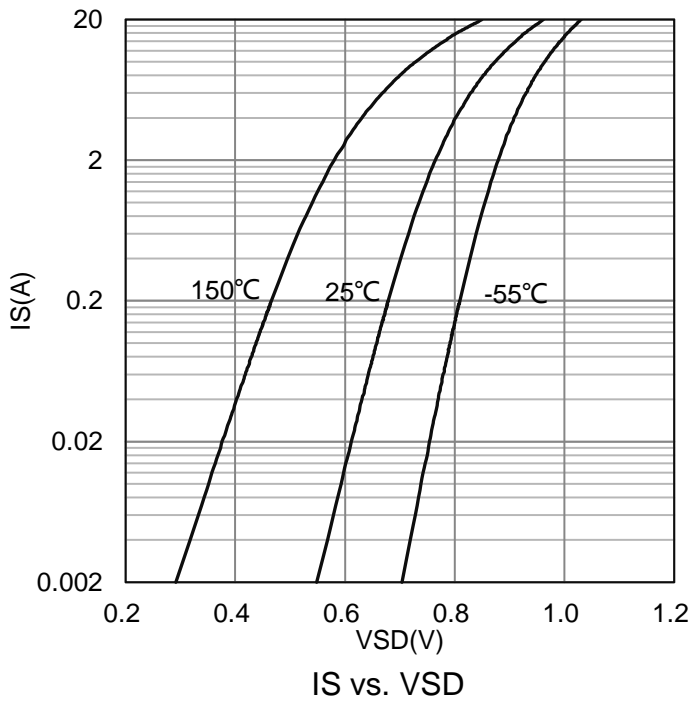
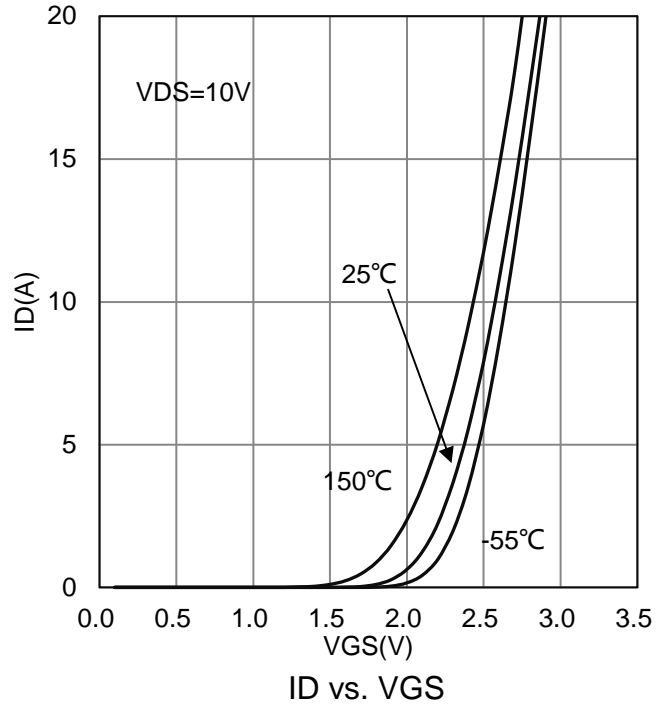
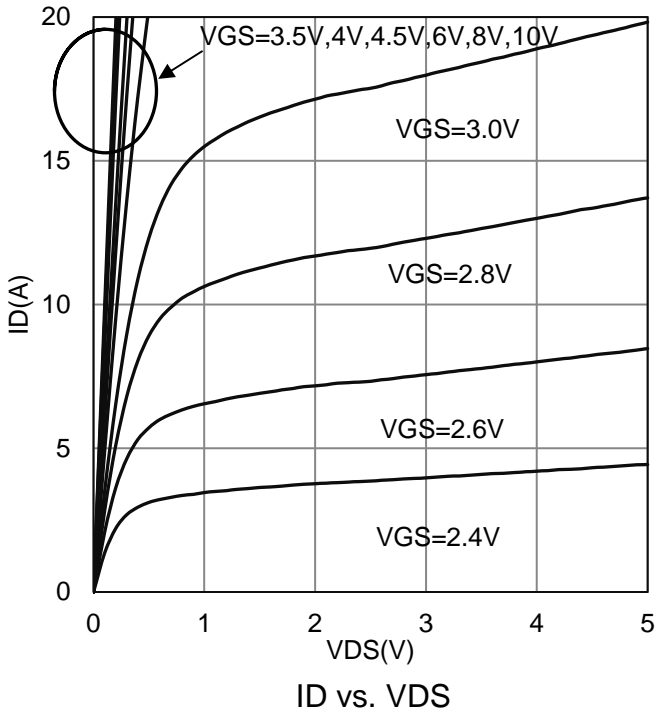
**7.P-ELECTRICAL CHARACTERISTICS CURVES**



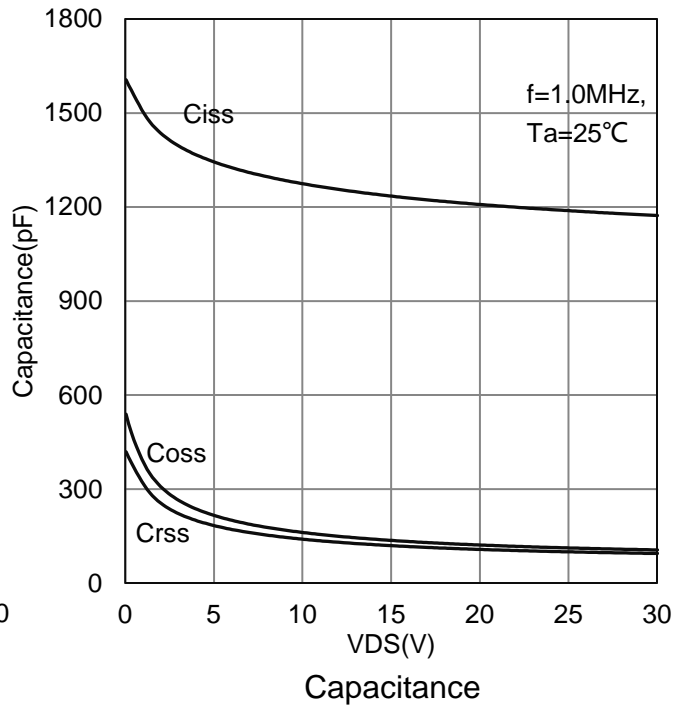
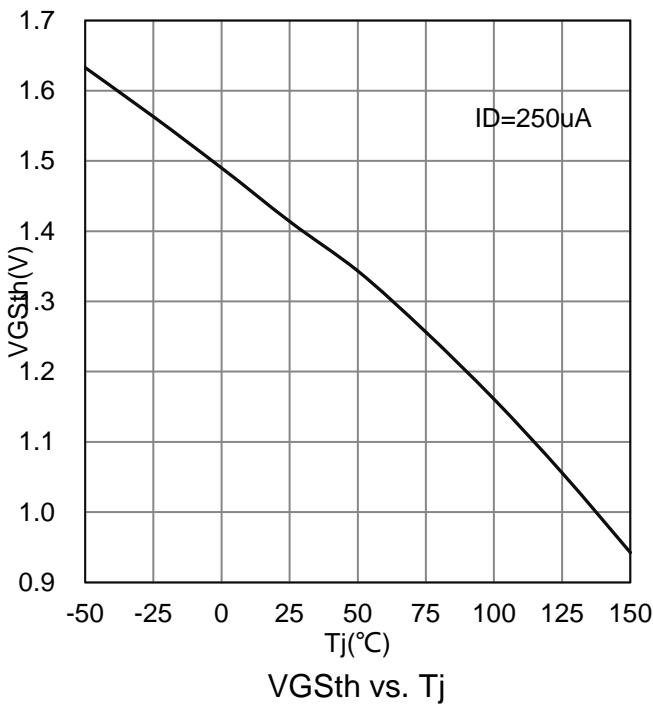
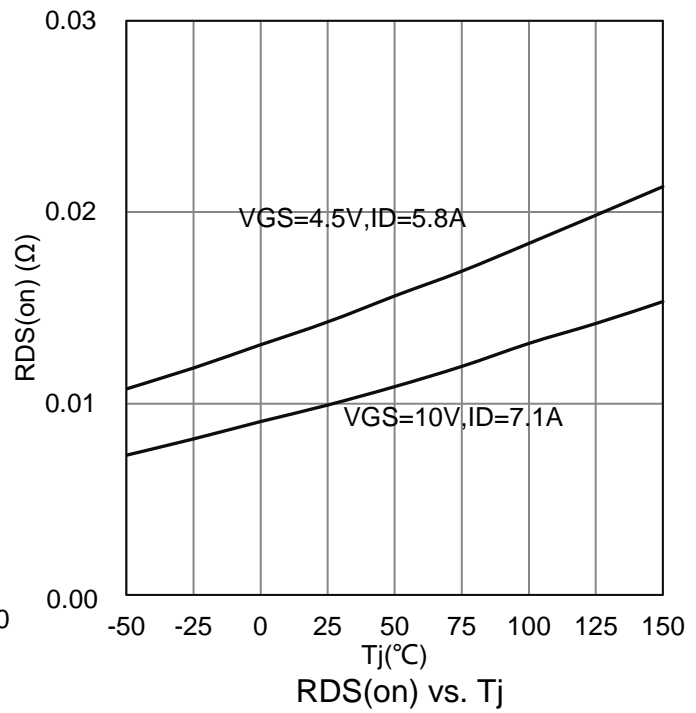
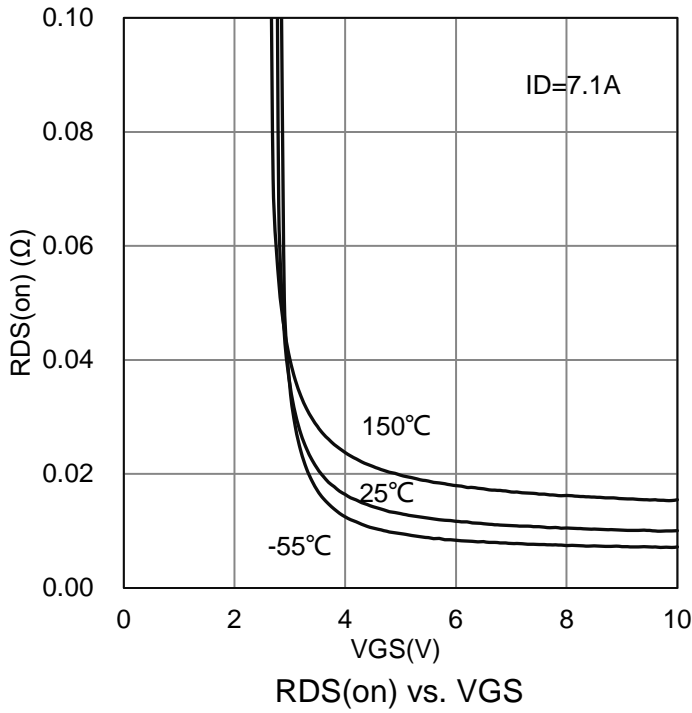
**7.P-ELECTRICAL CHARACTERISTICS CURVES(Con.)**



7.N-ELECTRICAL CHARACTERISTICS CURVES

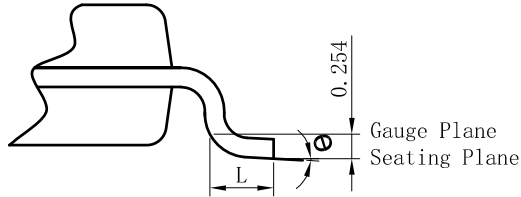
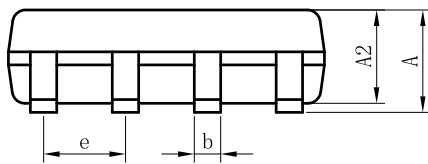
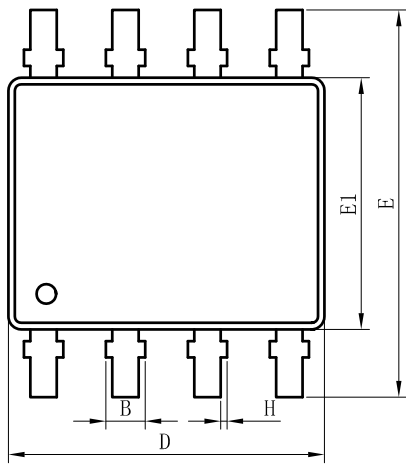


**7.P-ELECTRICAL CHARACTERISTICS CURVES(Con.)**

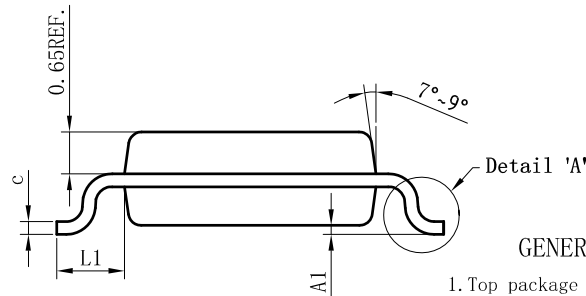


### 8. OUTLINE AND DIMENSIONS

SOP8



Detail 'A'



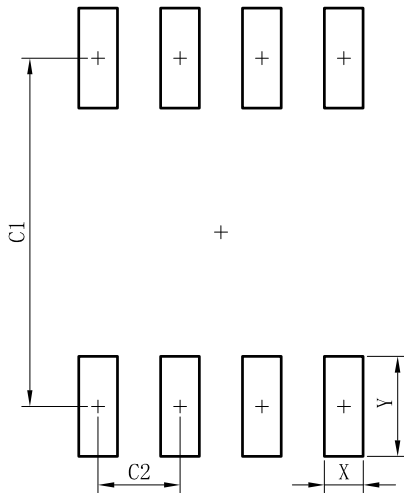
Detail 'A'

SOP8			
DIM	MIN	NOR	MAX
A	-	-	1.75
A1	0.10	0.15	0.20
A2	1.35	1.45	1.55
b	0.33	0.42	0.51
c	0.15	0.22	0.29
D	4.77	4.90	5.03
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
L	0.46	0.66	0.86
L1	0.85	1.05	1.25
θ	0°	5°	8°
B	-	-	0.55
H	0	0.05	0.10
All Dimensions in mm			

#### GENERAL NOTES

1. Top package surface finish  $Ra0.4 \pm 0.2 \mu m$
2. Bottom package surface finish  $Ra0.7 \pm 0.2 \mu m$
3. Side package surface finish  $Ra0.4 \pm 0.2 \mu m$
4. Package Body Sizes Exclude Mold Flash, Protrusion Or Gate Burrs. Mold Flash, Protrusion Or Gate Burrs Shall Not Exceed 0.10 mm Per Side.
5. Dimension "b" Does Not Include Dambar Protrusion.

### 9. SOLDERING FOOTPRINT



SOP8	
DIM	(mm)
X	0.60
Y	1.55
C1	5.40
C2	1.27



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