



## 20V/9A N-Channel Junction Power MOSFET

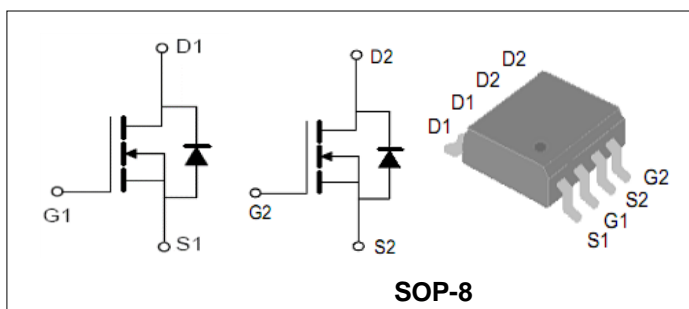
### Features

- Low On-Resistance
- Fast Switching

BVDSS	20	V
ID	9	A
RDSON@VGS=10V	7	mΩ
RDSON@VGS=4.5V	8	mΩ
RDSON@VGS=2.5V	10	mΩ

### Applications

- Power factor correction (PFC)
- Switched mode power supplies(SMPS)
- Uninterruptible Power Supply (UPS)



### Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PTS9926B	SOP-8	PTS9926B	13inch	3000PCS	48000PCS

### Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
<b>Common Ratings (TC=25°C Unless Otherwise Noted)</b>			
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	20	V
$V_{GS}$	Gate-Source Voltage	±12	V
$T_J$	Maximum Junction Temperature	150	°C
$T_{STG}$	Storage Temperature Range	-55 to 150	°C
$I_S$	Diode Continuous Forward Current	$T_A = 25^\circ\text{C}$ 8	A
<b>Mounted on Large Heat Sink</b>			
$I_{DM}$	Pulse Drain Current Tested (Silicon Limit) (Note1)	$T_A = 25^\circ\text{C}$ 30	A
$I_D$	Continuous Drain current	$T_A = 25^\circ\text{C}$ 9	A
$P_D$	Maximum Power Dissipation	$T_A = 25^\circ\text{C}$ 2.5	W
$R_{\theta Jc}$	Thermal Resistance Junction-to-Case (Note2)	50	°C/W

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Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
<b>Static Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
V <sub>(BR)DSS</sub>	Drain- Source Breakdown Voltage	VGS=0V ID=250μA	20	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain current	VDS=20V,VGS=0V	--	--	1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	VGS=±10V,VDS=0V	--	--	±100	nA
V <sub>GS(TH)</sub>	Gate Threshold Voltage	VDS=VGS,ID=250μA	0.5	--	1.2	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance (Note3)	VGS=10V, ID=9A	--	7	11	mΩ
		VGS=4.5V, ID=8A	--	8	16	
		VGS=2.5V, ID=6A	--	10	18	
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated) (Note4)</b>						
C <sub>iss</sub>	Input Capacitance	VDS=10V, VGS=0V, F=1MHz	--	900	--	pF
C <sub>oss</sub>	Output Capacitance		--	162	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	105	--	pF
Q <sub>g</sub>	Total Gate Charge	VDS=10V, ID=9A, VGS=10V	--	15	--	nC
Q <sub>gs</sub>	Gate-Source Charge		--	1.8	--	nC
Q <sub>gd</sub>	Gate-Drain Charge		--	2.8	--	nC
<b>Switching Characteristics (Note4)</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	VDS=15V, R <sub>L</sub> =0.5Ω, RG=3Ω, VGS=10V	--	4.5	--	nS
t <sub>r</sub>	Turn-on Rise Time		--	9.2	--	nS
t <sub>d(off)</sub>	Turn-off Delay Time		--	18.7	--	nS
t <sub>f</sub>	Turn-off Fall Time		--	3.3	--	nS
<b>Source- Drain Diode Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
V <sub>SD</sub>	Forward on voltage	ISD=8A,VGS=0V	--	--	1.2	V

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.



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Typical Characteristics

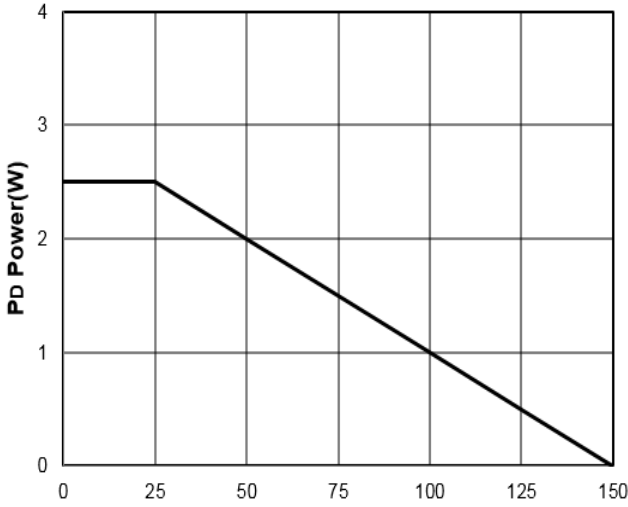


Figure1: Tj Junction Temperature (°C)

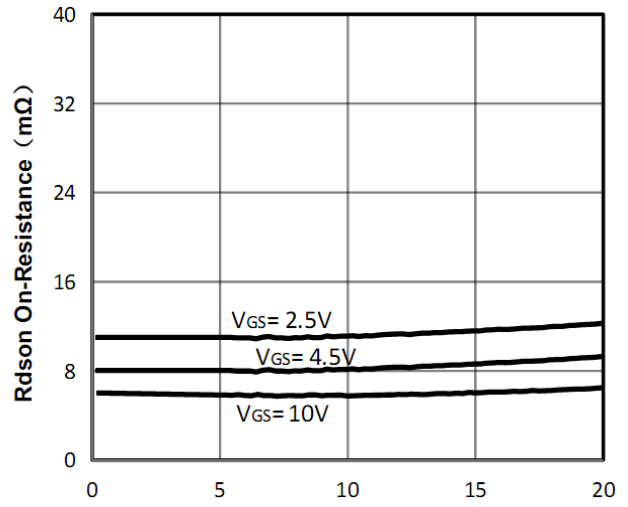


Figure2: Id Drain Current (A)

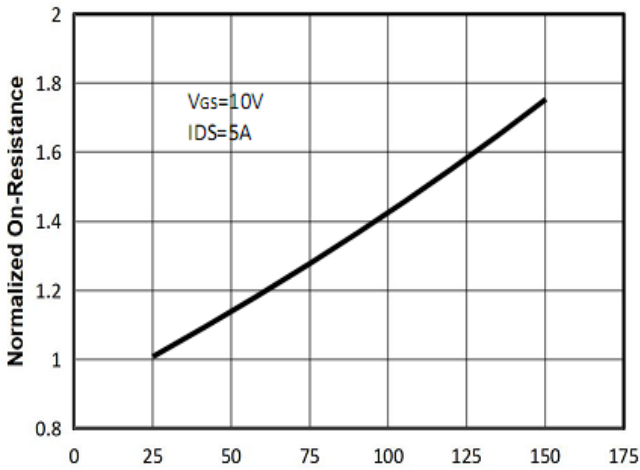


Figure3: Tj Junction Temperature (°C)

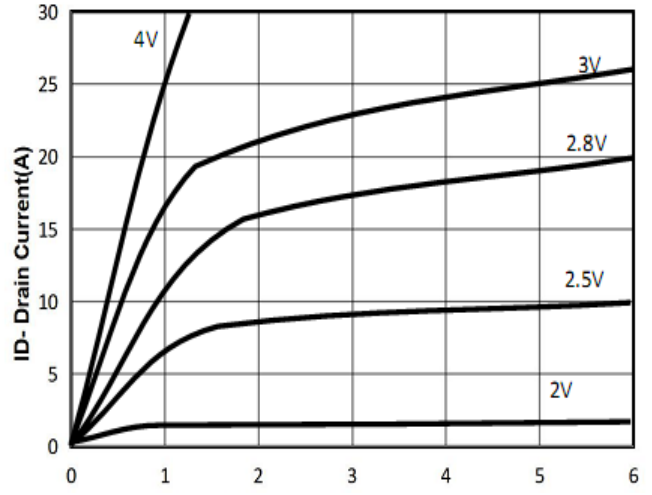


Figure4: Vds Drain-Source Voltage (V)

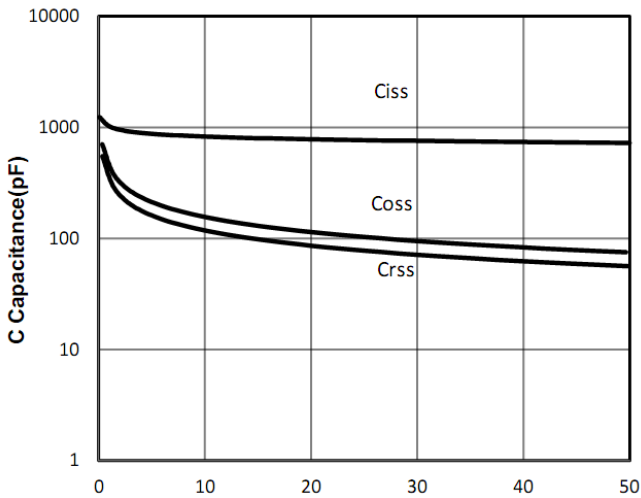


Figure5: Vds Drain-Source Voltage (V)

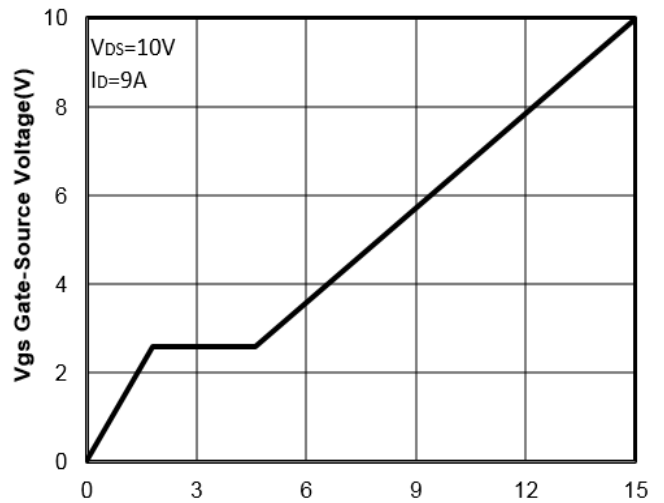


Figure6: Qg Gate Charge (nC)



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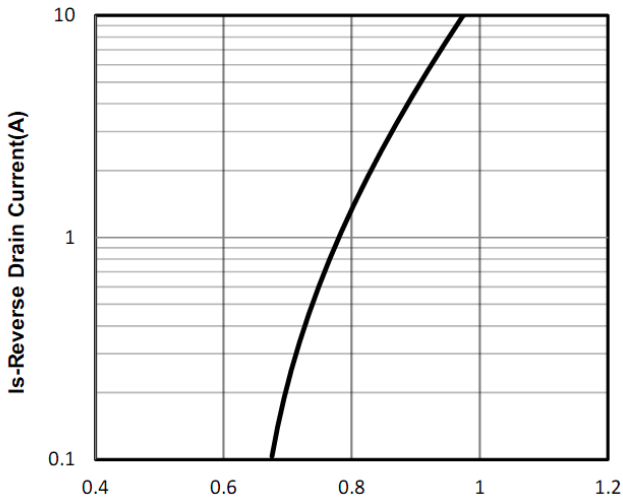


Figure7: Vsd Source-Drain Voltage (V)

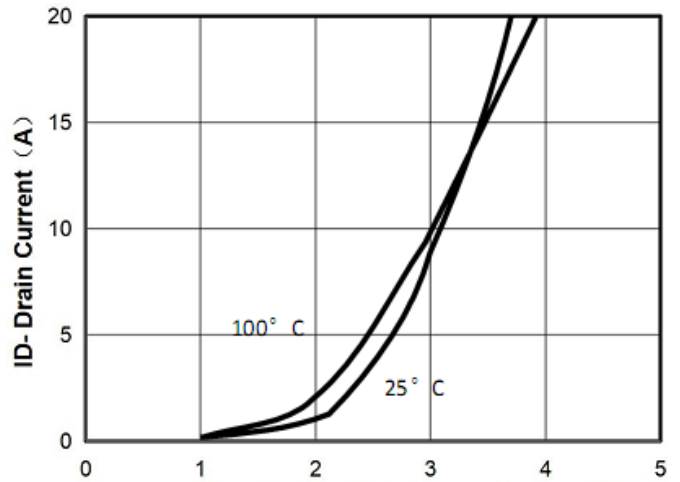


Figure8: Vgs Gate-Source Voltage (V)

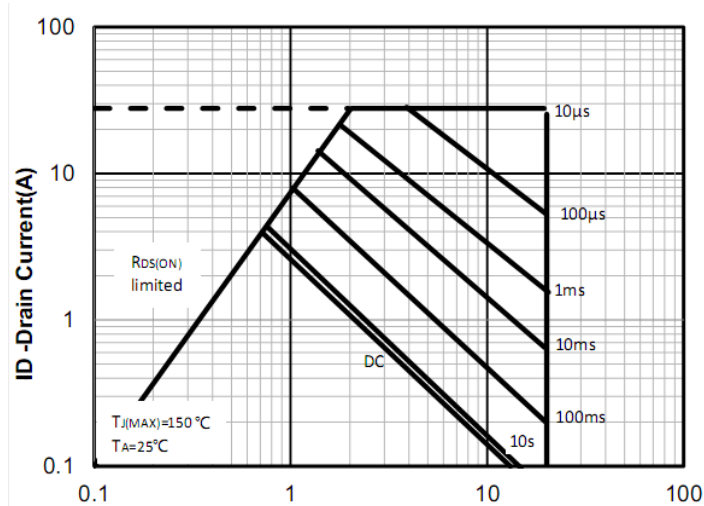


Figure9: Vds Drain-Source Voltage (V)

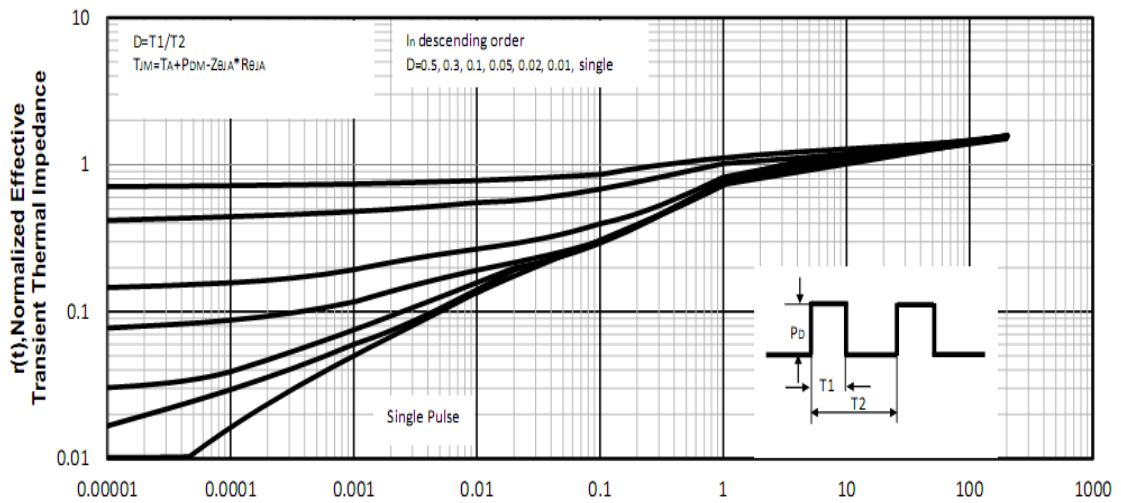


Figure10: Square Wave Pulse Duration (sec)

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Test Circuit and Waveform:

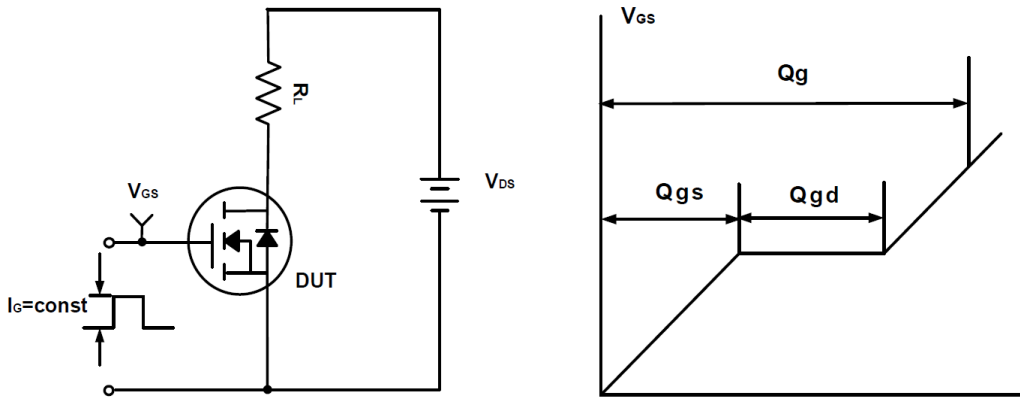


Figure A Gate Charge Test Circuit & Waveforms

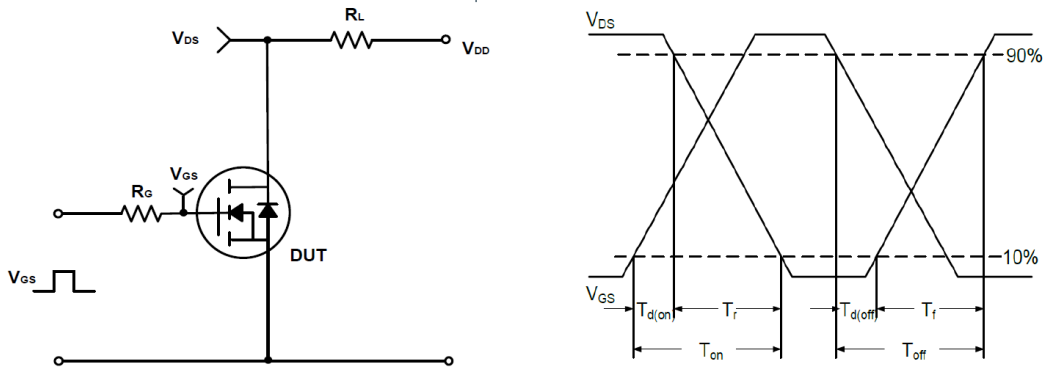


Figure B Switching Test Circuit & Waveforms

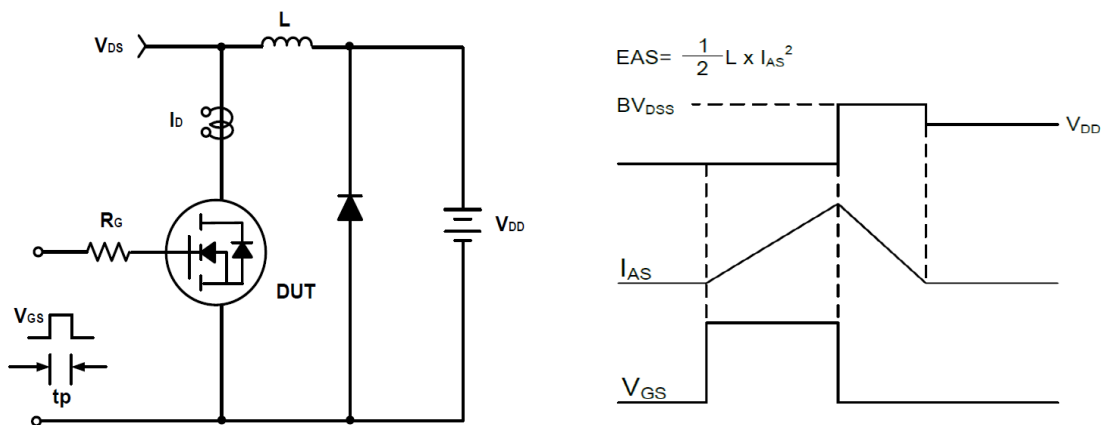
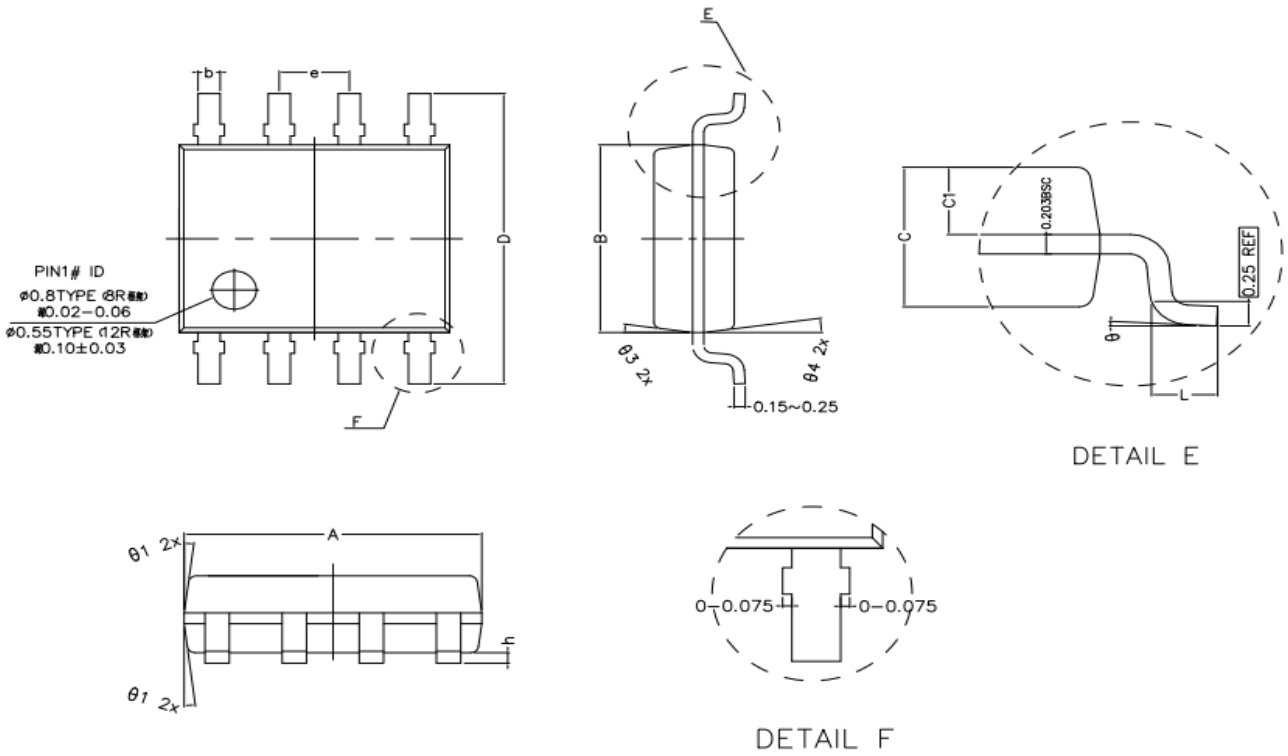


Figure C Unclamped Inductive Switching Circuit & Waveforms

**20V/9A N-Channel Junction Power MOSFET**
**SOP-8 Package Outline Dimensions (Units: mm)**


COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	4.800	4.900	5.000
B	3.800	3.900	4.000
C	1.350	1.450	1.550
C1	0.650	0.700	0.750
D	5.900	6.100	6.300
L	0.500	0.600	0.700
b	0.350	0.400	0.450
h	0.050	0.150	0.250
e	1.270TYPE		
$\theta_1$	7° TYPE(8R)   12° TYPE(12R)		
$\theta_2$	7° TYPE(8R)   10° TYPE(12R)		
$\theta_3$	8° TYPE(8R)   12° TYPE(12R)		
$\theta_4$	8° TYPE(8R)   10° TYPE(12R)		
$\theta$	0° ~ 8°		