

# HD74HCT244

## Octal Buffers/Line Drivers/Line Receivers (with inverted 3-state outputs)

REJ03D0664-0200  
(Previous ADE-205-553)  
Rev.2.00  
Mar 30, 2006

### Description

The HD74HCT244 is a non-inverting buffer and has two active low enable ( $\overline{1G}$  and  $\overline{2G}$ ). Each enable independently controls 4 buffers.

This device does not have schmitt trigger inputs.

### Features

- LSTTL Output Logic Level Compatibility as well as CMOS Output Compatibility
- High Speed Operation:  $t_{pd}$  (A to Y) = 10 ns typ ( $C_L = 50$  pF)
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage:  $V_{CC} = 4.5$  to  $5.5$  V
- Low Input Current:  $1 \mu\text{A}$  max
- Low Quiescent Supply Current:  $I_{CC}$  (static) =  $4 \mu\text{A}$  max ( $T_a = 25^\circ\text{C}$ )
- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74HCT244P	DILP-20 pin	PRDP0020AC-B (DP-20NEV)	P	—
HD74HCT244FPEL	SOP-20 pin (JEITA)	PRSP0020DD-B (FP-20DAV)	FP	EL (2,000 pcs/reel)
HD74HCT244RPEL	SOP-20 pin (JEDEC)	PRSP0020DC-A (FP-20DBV)	RP	EL (1,000 pcs/reel)
HD74HCT244TELL	TSSOP-20 pin	PTSP0020JB-A (TTP-20DAV)	T	ELL (2,000 pcs/reel)

Note: Please consult the sales office for the above package availability.

### Function Table

Inputs		Output
$\overline{G}$	A	Y
H	X	Z
L	H	H
L	L	L

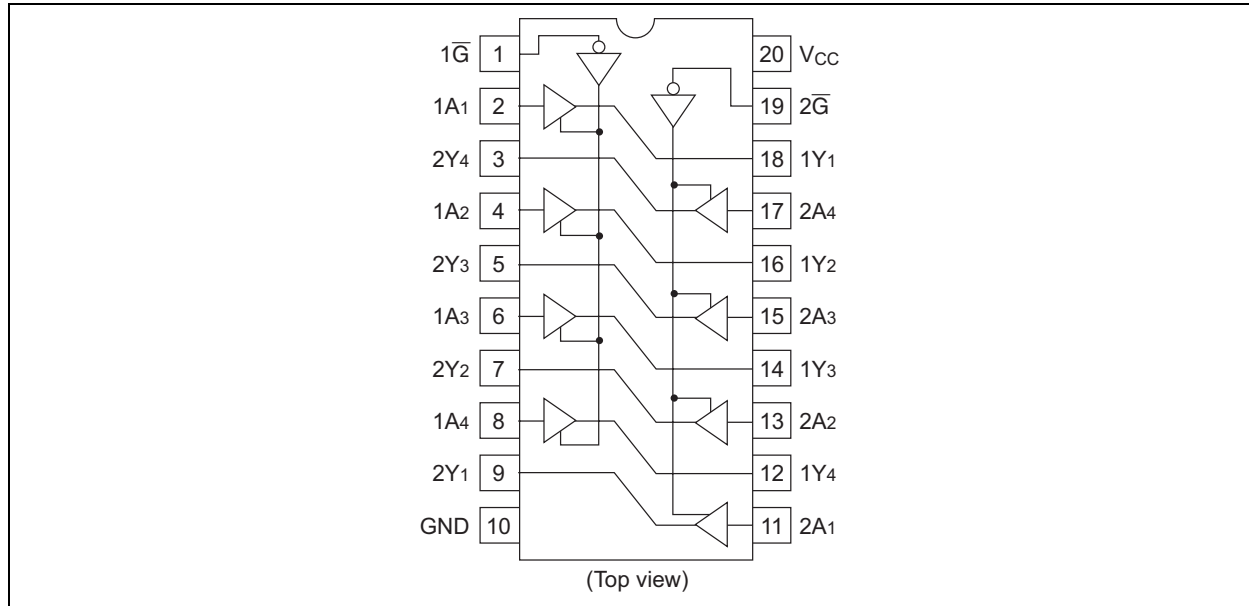
H : high level

L : low level

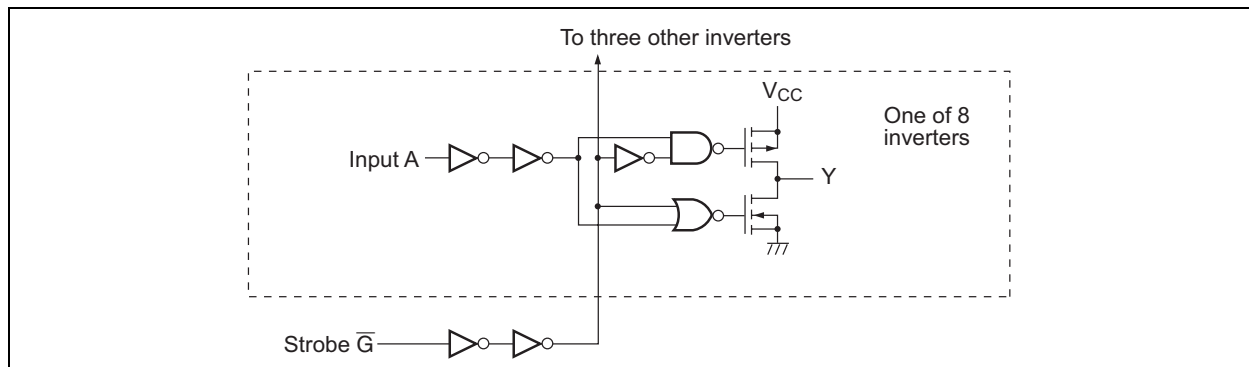
X : irrelevant

Z : off (high-impedance) state of a 3-state output

### Pin Arrangement



### Logic Diagram



### Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage range	$V_{CC}$	-0.5 to 7.0	V
Input / Output voltage	$V_{IN}, V_{OUT}$	-0.5 to $V_{CC} + 0.5$	V
Input / Output diode current	$I_{IK}, I_{OK}$	$\pm 20$	mA
Output current	$I_O$	$\pm 35$	mA
$V_{CC}, GND$ current	$I_{CC}$ or $I_{GND}$	$\pm 75$	mA
Power dissipation	$P_T$	500	mW
Storage temperature	$T_{stg}$	-65 to +150	$^{\circ}C$

Note: The absolute maximum ratings are values, which must not individually be exceeded, and furthermore, no two of which may be realized at the same time.

### Recommended Operating Conditions

Item	Symbol	Ratings	Unit	Conditions
Supply voltage	$V_{CC}$	4.5 to 5.5	V	
Input / Output voltage	$V_{IN}, V_{OUT}$	0 to $V_{CC}$	V	
Operating temperature	$T_a$	-40 to 85	°C	
Input rise / fall time <sup>1</sup>	$t_r, t_f$	0 to 500	ns	$V_{CC} = 4.5\text{ V}$

Notes: 1. This item guarantees maximum limit when one input switches.  
 Waveform: Refer to test circuit of switching characteristics.

### Electrical Characteristics

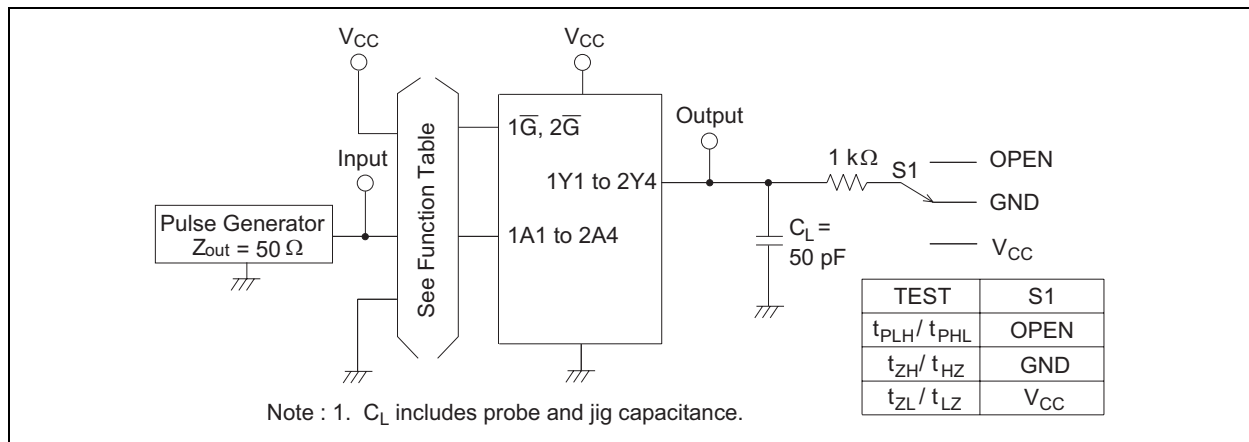
Item	Symbol	$V_{CC}$ (V)	$T_a = 25^\circ\text{C}$			$T_a = -40\text{ to }+85^\circ\text{C}$		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Input voltage	$V_{IH}$	4.5 to 5.5	2.0	—	—	2.0	—	V		
	$V_{IL}$	4.5 to 5.5	—	—	0.8	—	0.8			
Output voltage	$V_{OH}$	4.5	4.4	—	—	4.4	—	V	$V_{in} = V_{IH}$ or $V_{IL}$	$I_{OH} = -20\ \mu\text{A}$
		4.5	4.18	—	—	4.13	—			$I_{OH} = -6\ \text{mA}$
	$V_{OL}$	4.5	—	—	0.1	—	0.1	V	$V_{in} = V_{IH}$ or $V_{IL}$	$I_{OL} = 20\ \mu\text{A}$
		4.5	—	—	0.26	—	0.33			$I_{OL} = 6\ \text{mA}$
Off-state output current	$I_{OZ}$	5.5	—	—	$\pm 0.5$	—	$\pm 5.0$	$\mu\text{A}$	$V_{in} = V_{IH}$ or $V_{IL}$ , $V_{out} = V_{CC}$ or GND	
Input current	$I_{in}$	5.5	—	—	$\pm 0.1$	—	$\pm 1.0$	$\mu\text{A}$	$V_{in} = V_{CC}$ or GND	
Quiescent current	$I_{CC}$	5.5	—	—	4.0	—	40	$\mu\text{A}$	$V_{in} = V_{CC}$ or GND, $I_{out} = 0\ \mu\text{A}$	

### Switching Characteristics

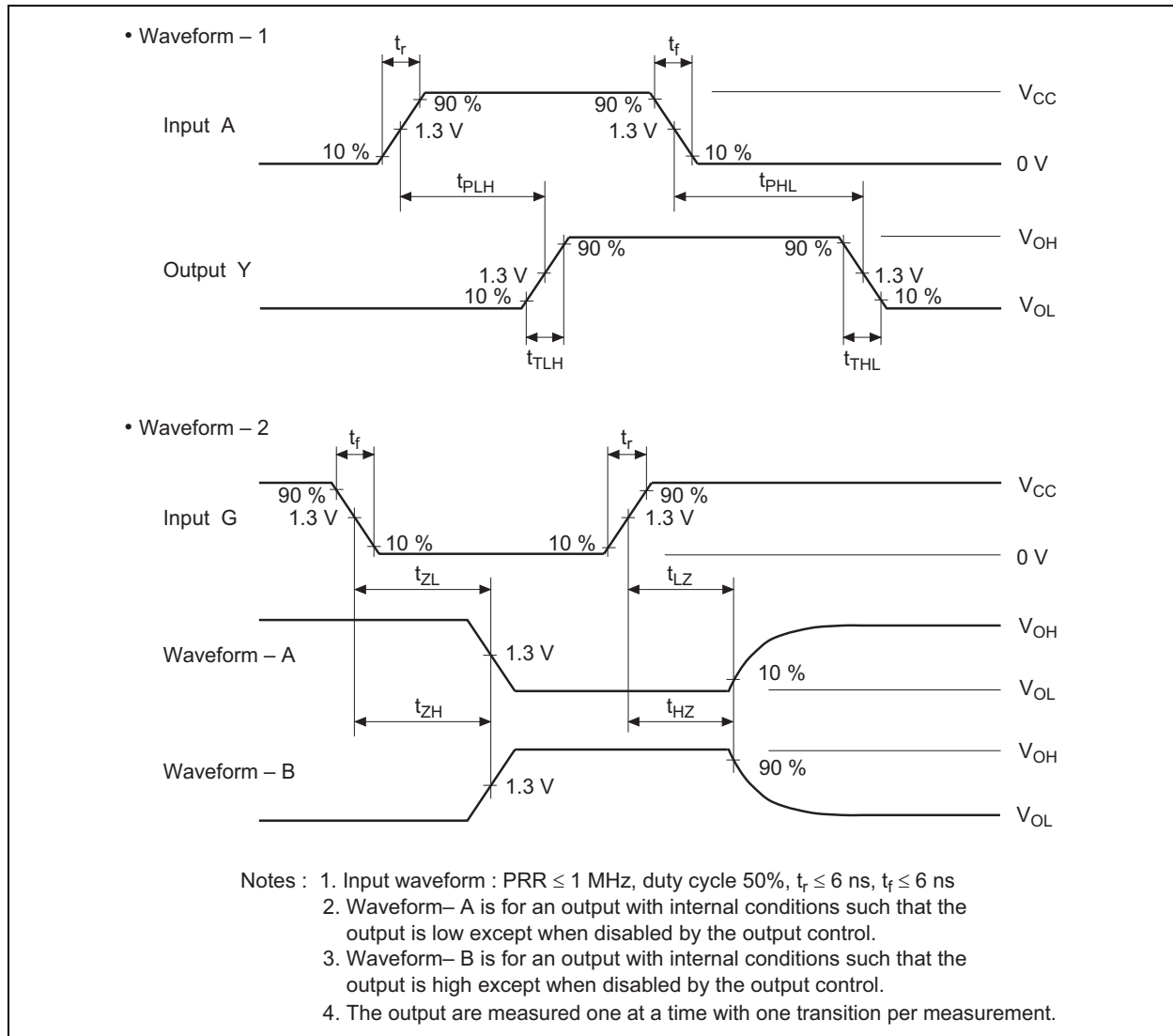
( $C_L = 50\ \text{pF}$ , Input  $t_r = t_f = 6\ \text{ns}$ )

Item	Symbol	$V_{CC}$ (V)	$T_a = 25^\circ\text{C}$			$T_a = -40\text{ to }+85^\circ\text{C}$		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Propagation delay time	$t_{PHL}$	4.5	—	11	20	—	25	ns		
	$t_{PLH}$	4.5	—	9	20	—	25			
Output enable time	$t_{ZL}$	4.5	—	13	30	—	38	ns		
	$t_{ZH}$	4.5	—	12	30	—	38			
Output disable time	$t_{LZ}$	4.5	—	14	30	—	38	ns		
	$t_{HZ}$	4.5	—	17	30	—	38			
Output rise/fall time	$t_{TLH} / t_{THL}$	4.5	—	4	12	—	15	ns		
Input capacitance	$C_{in}$	—	—	5	10	—	10	pF		

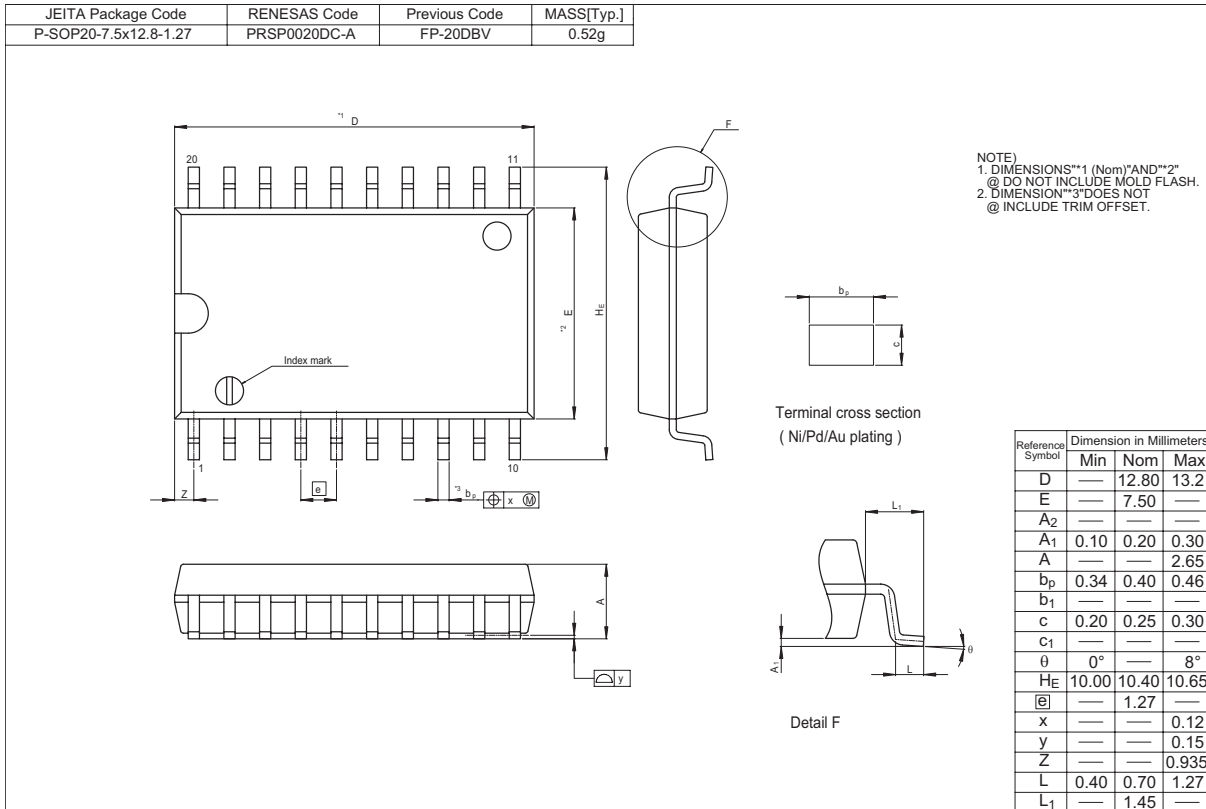
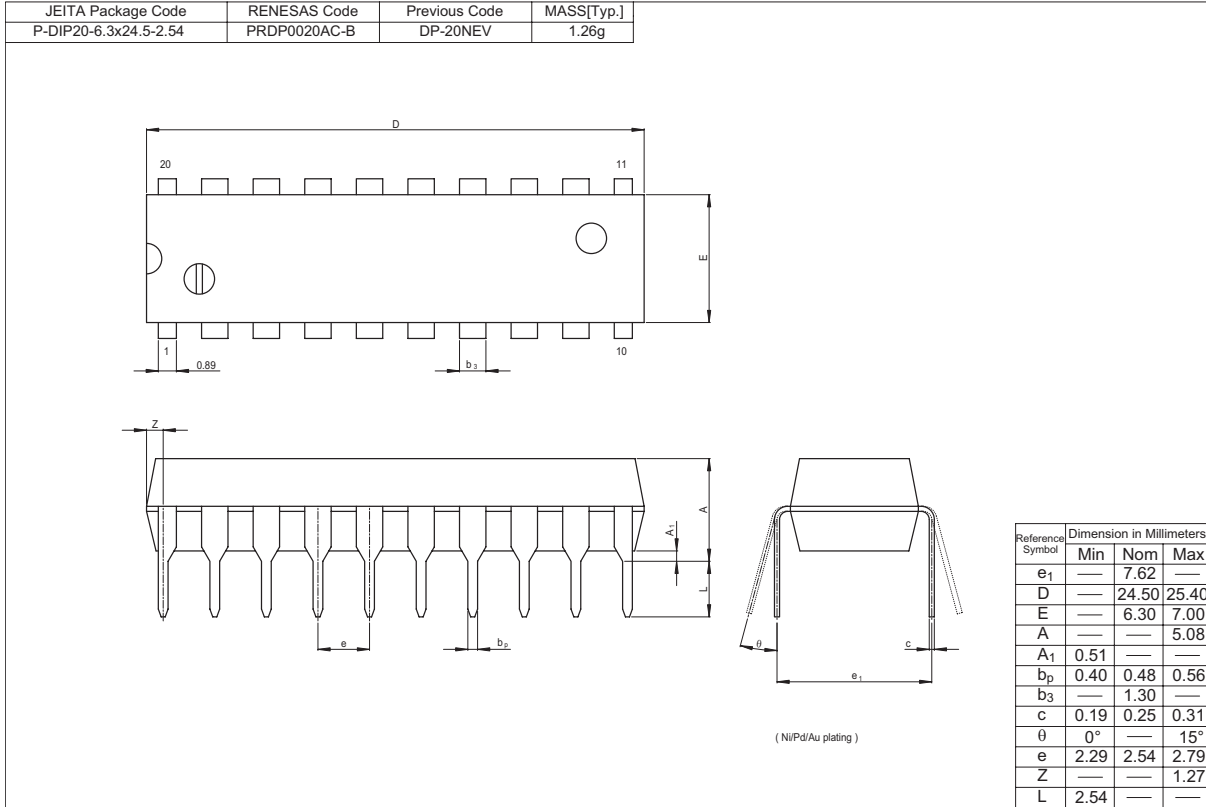
### Test Circuit



Waveforms

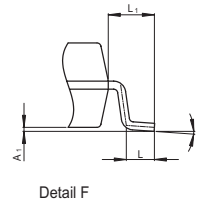
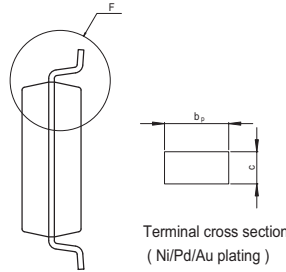
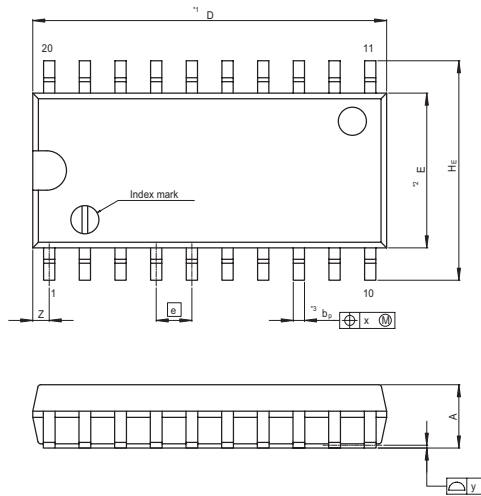


Package Dimensions



# HD74HCT244

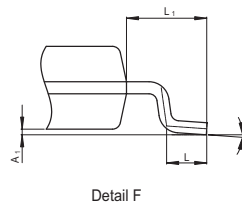
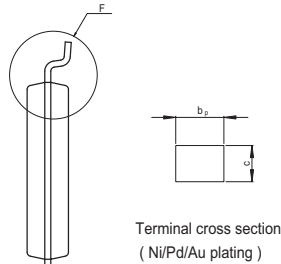
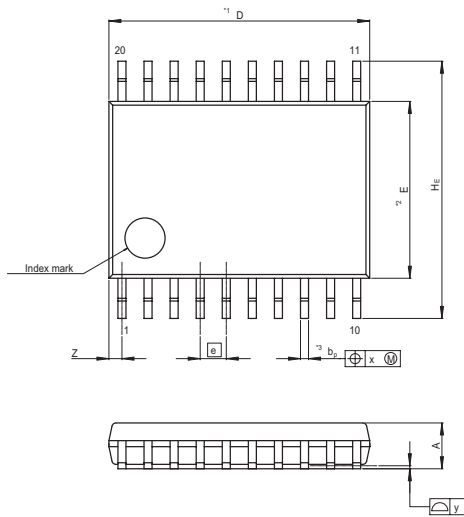
JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP20-5.5x12.6-1.27	PRSP0020DD-B	FP-20DAV	0.31g



NOTE)  
1. DIMENSIONS\*\*1 (Nom)\*\*AND\*\*2"  
DO NOT INCLUDE MOLD FLASH.  
2. DIMENSION\*\*3\*\*DOES NOT  
INCLUDE TRIM OFFSET.

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	12.60	13.0
E	—	5.50	—
A <sub>2</sub>	—	—	—
A <sub>1</sub>	0.00	0.10	0.20
A	—	—	2.20
b <sub>p</sub>	0.34	0.40	0.46
b <sub>1</sub>	—	—	—
c	0.15	0.20	0.25
c <sub>1</sub>	—	—	—
θ	0°	—	8°
H <sub>E</sub>	7.50	7.80	8.00
e	—	1.27	—
x	—	—	0.12
y	—	—	0.15
Z	—	—	0.80
L	0.50	0.70	0.90
L <sub>1</sub>	—	1.15	—

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-TSSOP20-4.4x6.5-0.65	PTSP0020JB-A	TTP-20DAV	0.07g



NOTE)  
1. DIMENSIONS\*\*1 (Nom)\*\*AND\*\*2"  
DO NOT INCLUDE MOLD FLASH.  
2. DIMENSION\*\*3\*\*DOES NOT  
INCLUDE TRIM OFFSET.

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	6.50	6.80
E	—	4.40	—
A <sub>2</sub>	—	—	—
A <sub>1</sub>	0.03	0.07	0.10
A	—	—	1.10
b <sub>p</sub>	0.15	0.20	0.25
b <sub>1</sub>	—	—	—
c	0.10	0.15	0.20
c <sub>1</sub>	—	—	—
θ	0°	—	8°
H <sub>E</sub>	6.20	6.40	6.60
e	—	0.65	—
x	—	—	0.13
y	—	—	0.10
Z	—	—	0.65
L	0.4	0.5	0.6
L <sub>1</sub>	—	1.0	—

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