

# 2SJ528(L), 2SJ528(S)

Silicon P Channel MOS FET  
High Speed Power Switching

# HITACHI

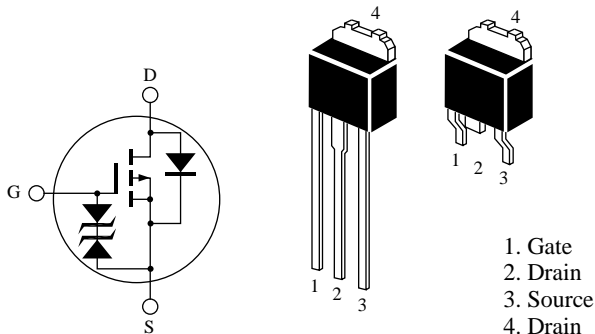
ADE-208-641A (Z)  
2nd. Edition  
Jul. 1998

## Features

- Low on-resistance  $R_{DS(on)} = 0.17 \Omega$  typ.
- 4 V gate drive devices
- High speed switching

## Outline

DPAK-2



## 2SJ528(L),2SJ528(S)

### Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	-60	V
Gate to source voltage	$V_{GSS}$	±20	V
Drain current	$I_D$	-7	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	-28	A
Body-drain diode reverse drain current	$I_{DR}$	-7	A
Avalanche current	$I_{AP}$ <sup>Note3</sup>	-7	A
Avalanche energy	$E_{AR}$ <sup>Note3</sup>	4.2	mJ
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	20	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

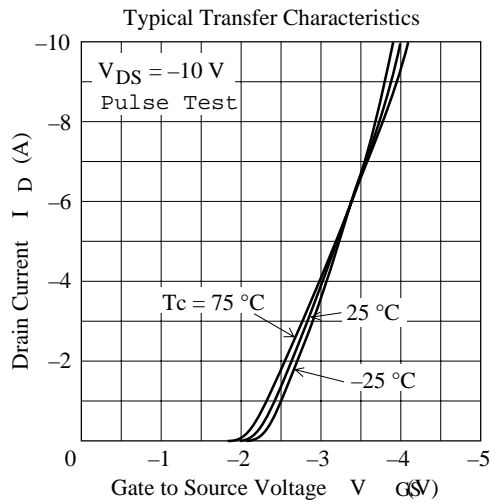
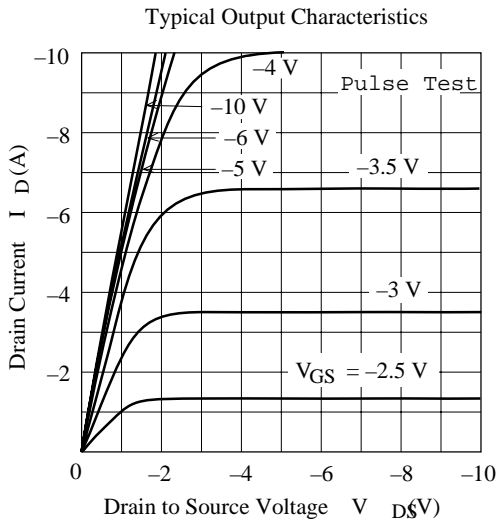
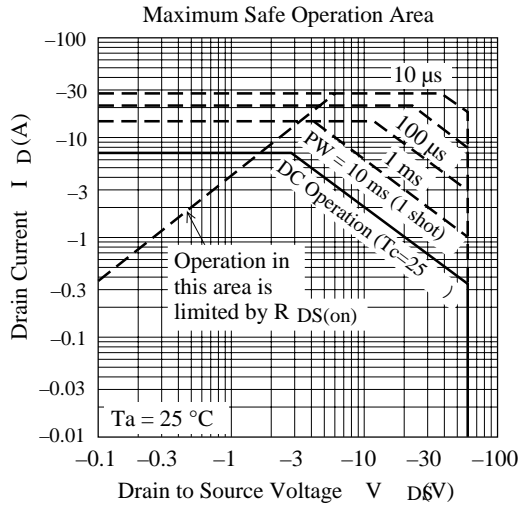
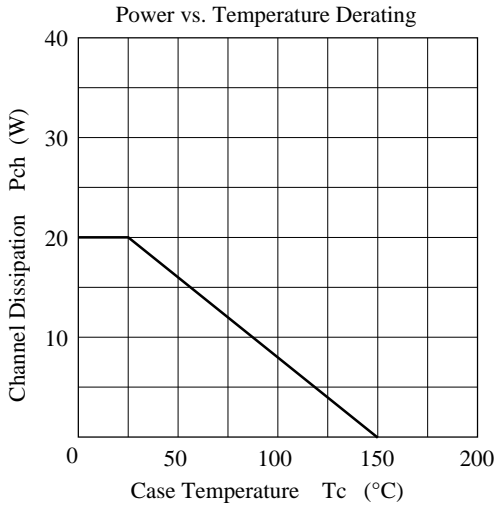
- Note: 1.  $PW \leq 10\mu s$ , duty cycle  $\leq 1\%$   
2. Value at  $T_c = 25^\circ C$   
3. Value at  $T_{ch} = 25^\circ C$ ,  $R_g \geq 50\ \Omega$

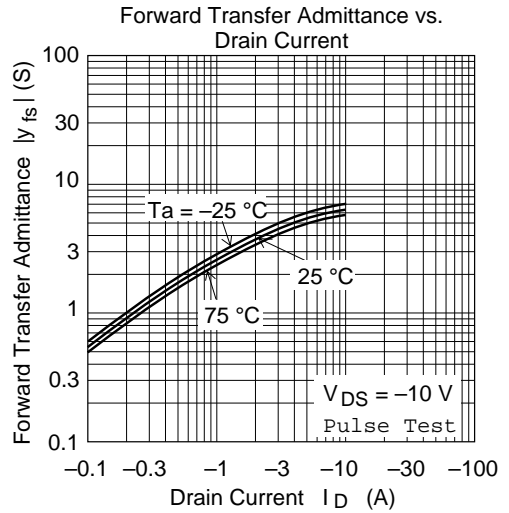
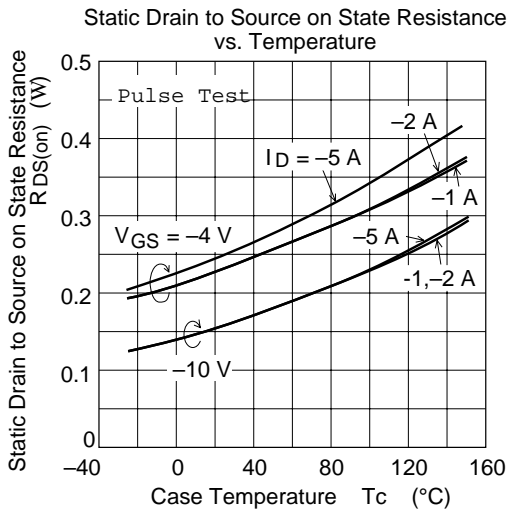
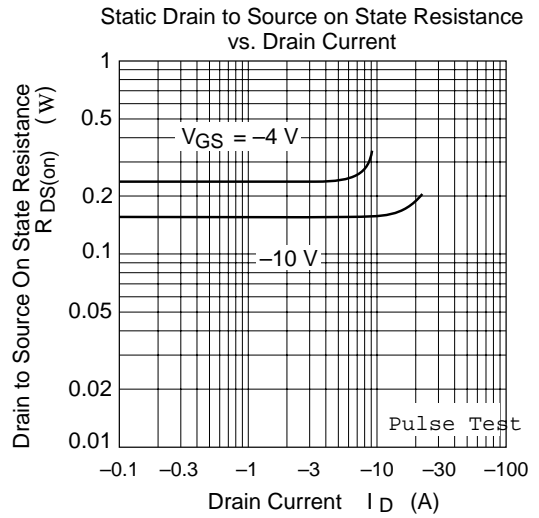
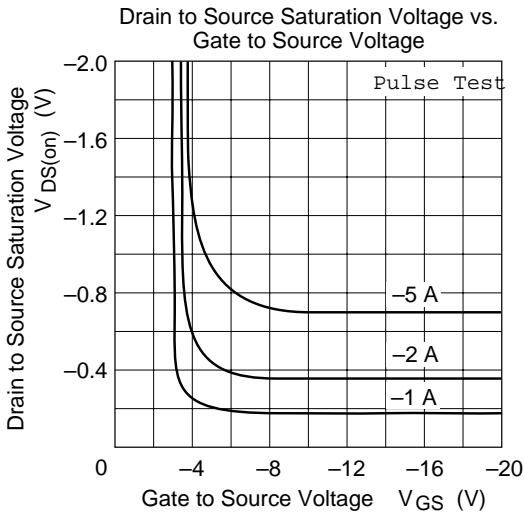
**Electrical Characteristics (Ta = 25°C)**

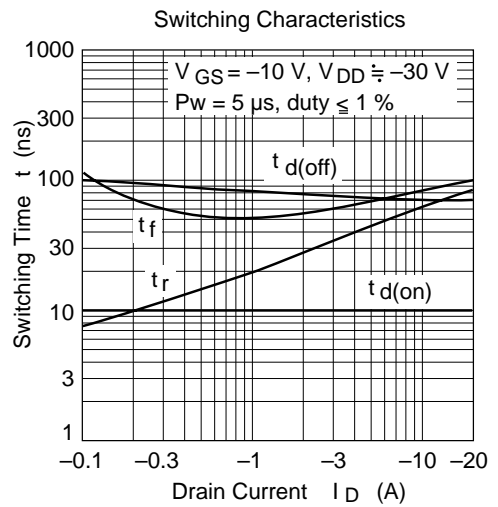
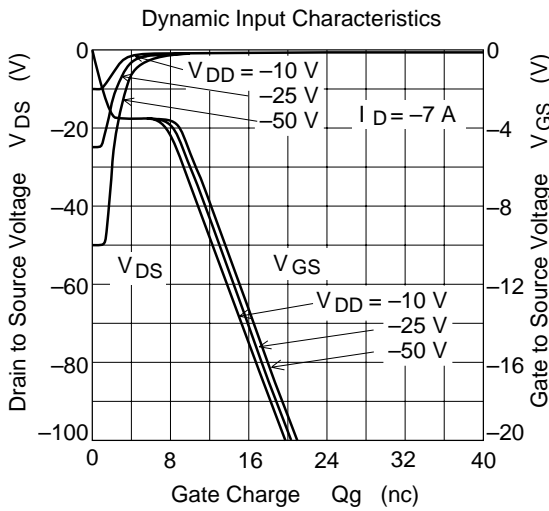
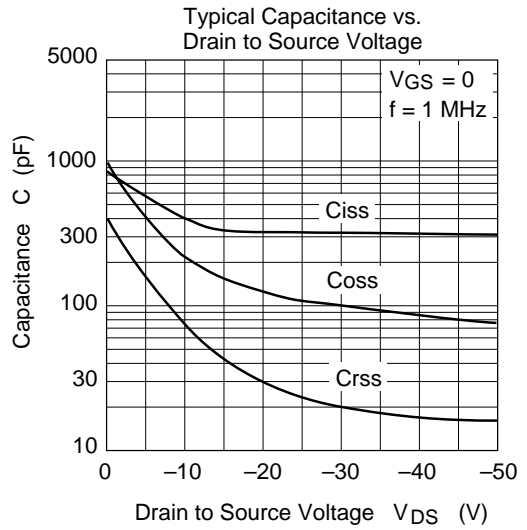
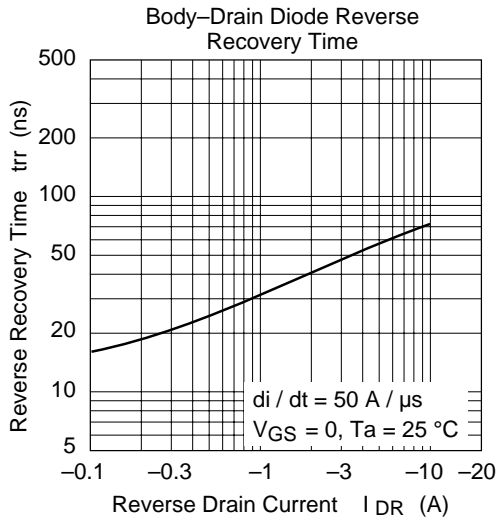
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-60	—	—	V	$I_D = -10\text{mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 20$	—	—	V	$I_G = \pm 100\mu\text{A}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	-10	$\mu\text{A}$	$V_{DS} = -60\text{V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 16\text{V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-1.0	—	-2.0	V	$I_D = -1\text{mA}$ , $V_{DS} = -10\text{V}$
Static drain to source on state	$R_{DS(on)}$	—	0.17	0.22	$\Omega$	$I_D = -4\text{A}$ , $V_{GS} = -10\text{V}$ <sup>Note4</sup>
resistance	$R_{DS(on)}$	—	0.24	0.37	$\Omega$	$I_D = -4\text{A}$ , $V_{GS} = -4\text{V}$ <sup>Note4</sup>
Forward transfer admittance	$ y_{fs} $	3.0	5.0	—	S	$I_D = -4\text{A}$ , $V_{DS} = -10\text{V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	400	—	pF	$V_{DS} = -10\text{V}$
Output capacitance	$C_{oss}$	—	220	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	75	—	pF	$f = 1\text{MHz}$
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$V_{GS} = -10\text{V}$ , $I_D = -4\text{A}$
Rise time	$t_r$	—	40	—	ns	$R_L = 7.5\Omega$
Turn-off delay time	$t_{d(off)}$	—	75	—	ns	
Fall time	$t_f$	—	65	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	-1.1	—	V	$I_F = -7\text{A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	65	—	ns	$I_F = -7\text{A}$ , $V_{GS} = 0$ $diF/dt = 50\text{A}/\mu\text{s}$

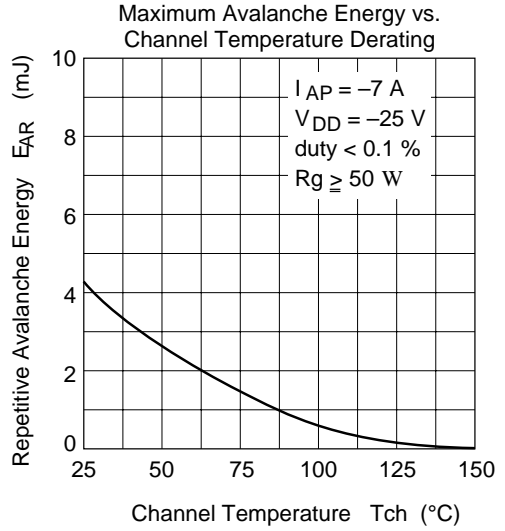
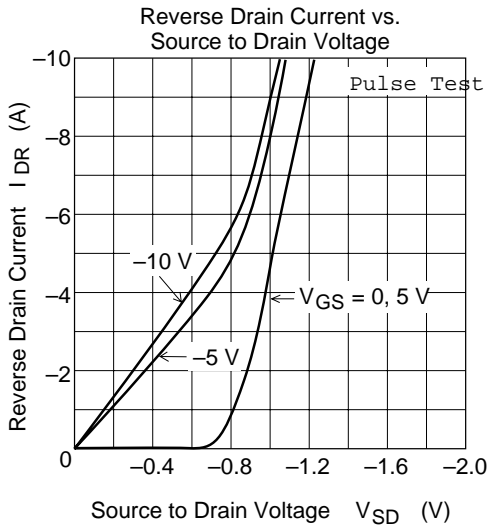
Note: 4. Pulse test

Main Characteristics

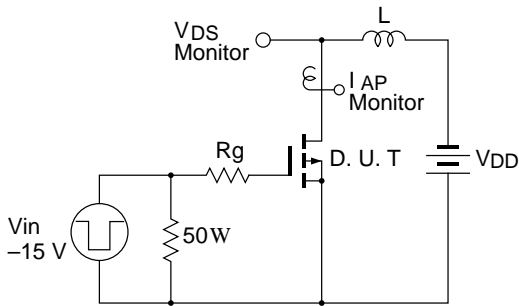




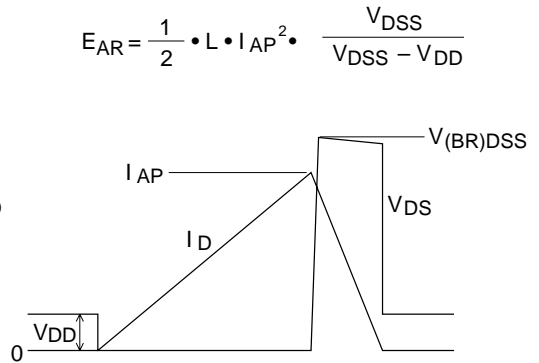


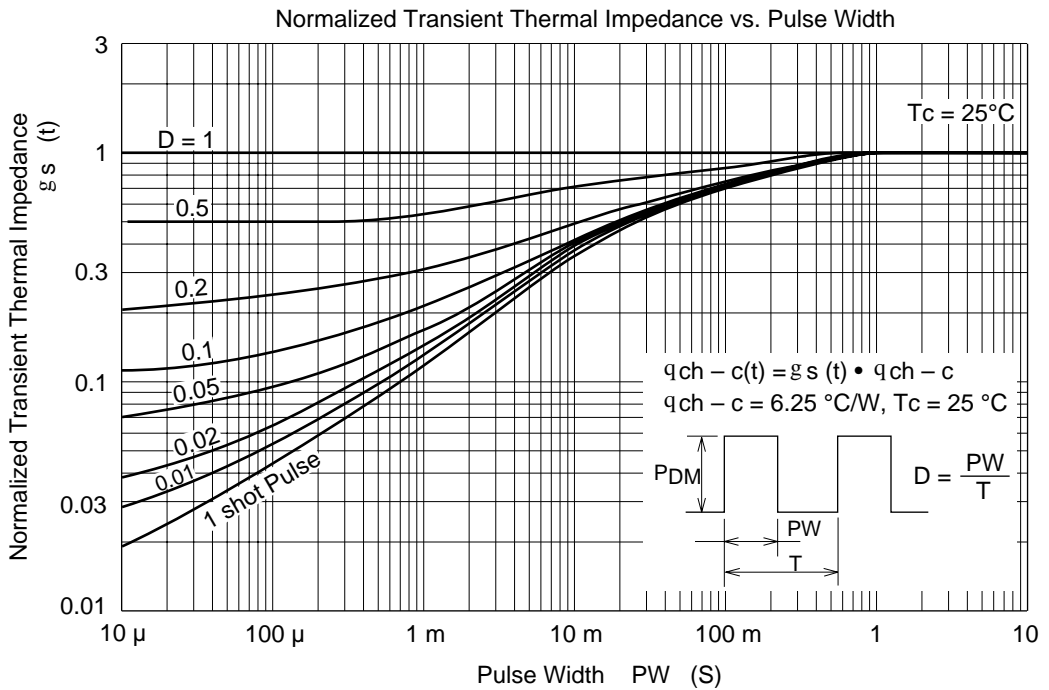


Avalanche Test Circuit

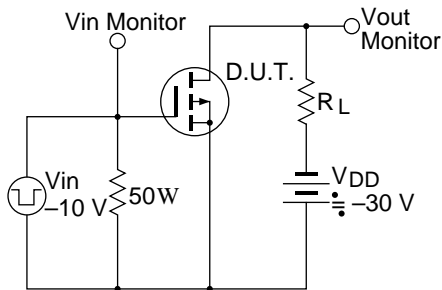


Avalanche Waveform

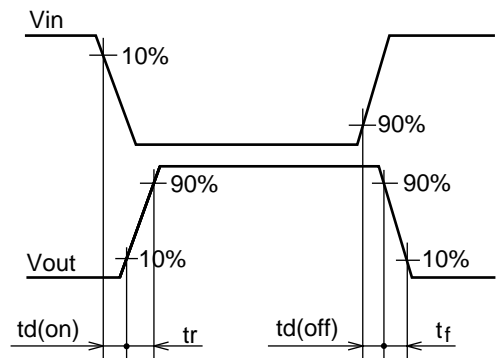




Switching Time Test Circuit



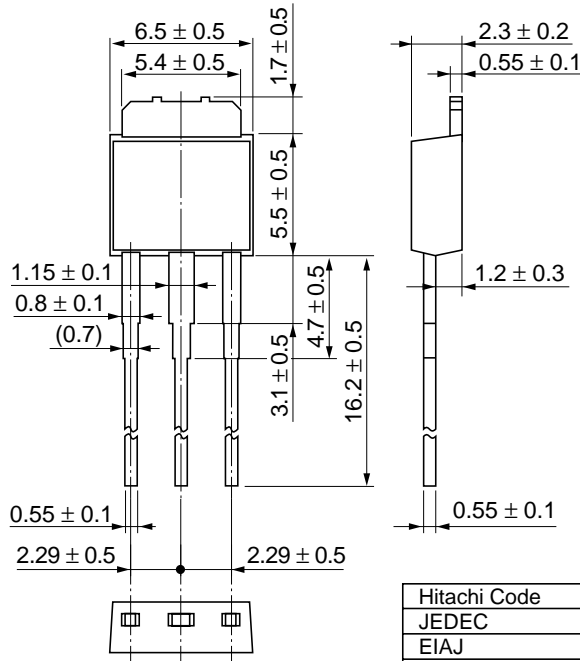
Waveform





Package Dimensions

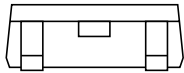
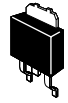
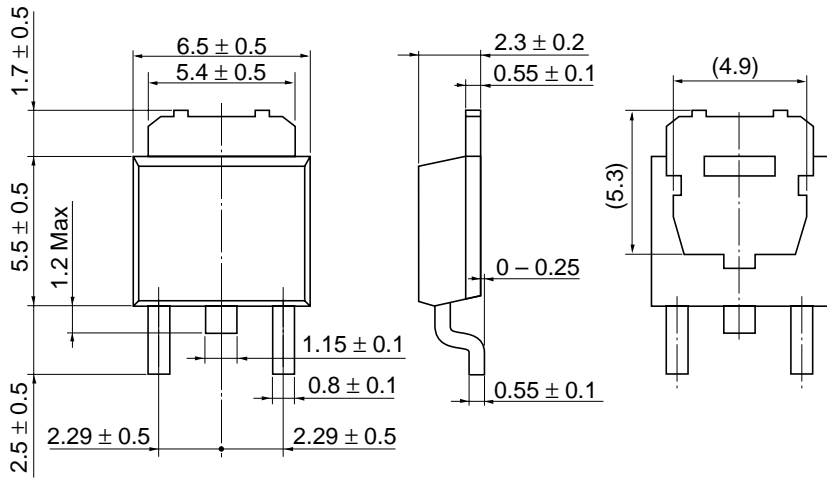
As of January, 2001  
Unit: mm



Hitachi Code	DPAK (L)-(2)
JEDEC	—
EIAJ	—
Mass (reference value)	0.42 g

# 2SJ528(L),2SJ528(S)

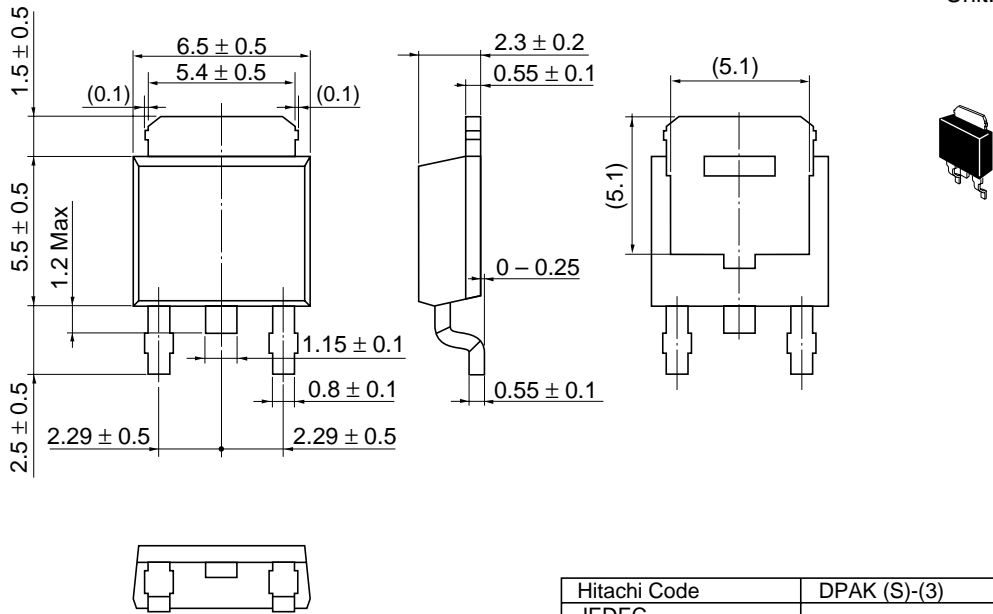
As of January, 2001  
Unit: mm



Hitachi Code	DPAK (S)-(1),(2)
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.28 g

As of January, 2001

Unit: mm



Hitachi Code	DPAK (S)-(3)
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.28 g

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