

2SJ527(L), 2SJ527(S)

Silicon P Channel MOS FET
High Speed Power Switching

HITACHI

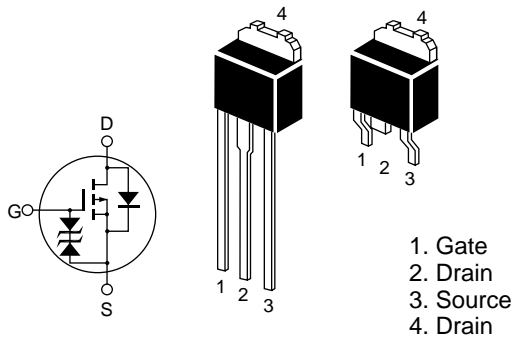
ADE-208-640A (Z)
2nd. Edition
Jul. 1998

Features

- Low on-resistance
 $R_{DS(on)} = 0.3 \Omega$ typ.
- Low drive current
- 4 V gate drive devices
- High speed switching

Outline

DPAK-1



2SJ527(L),2SJ527(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	-5	A
Drain peak current	$I_{D(pulse)}^{Note1}$	-20	A
Body-drain diode reverse drain current	I_{DR}	-5	A
Avalanche current	I_{AP}^{Note3}	-5	A
Avalanche energy	E_{AR}^{Note3}	2.1	mJ
Channel dissipation	Pch^{Note2}	20	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

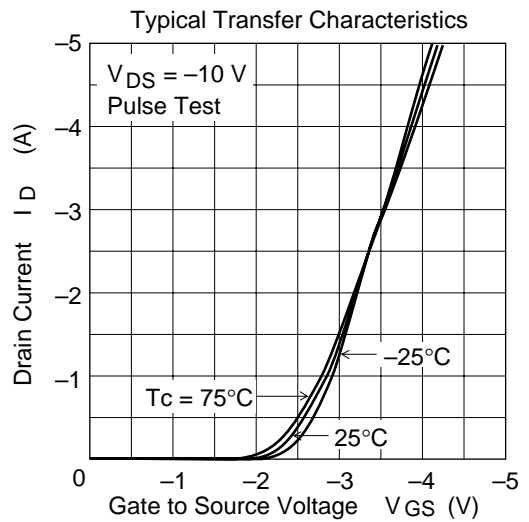
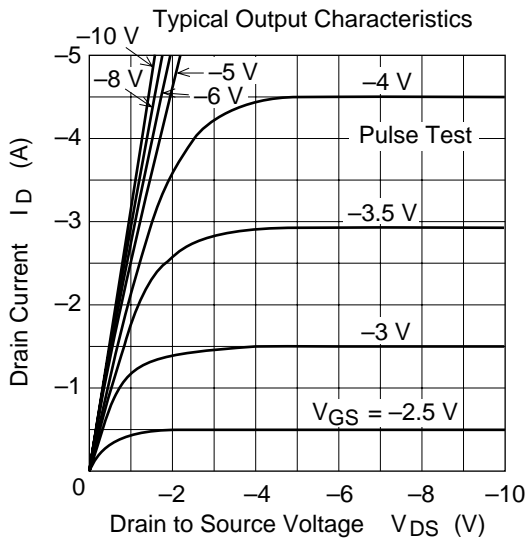
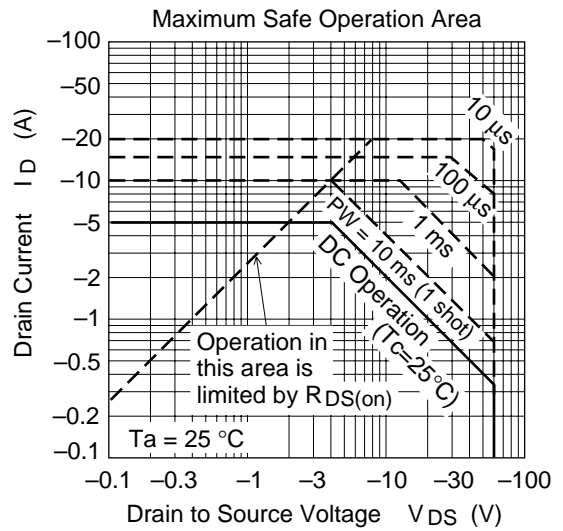
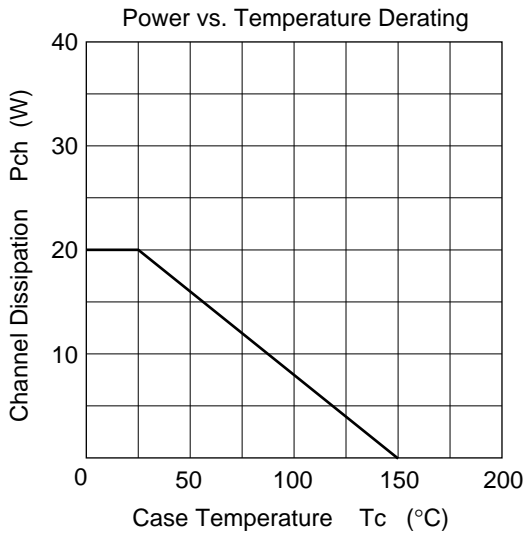
- Note: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
2. Value at $T_c = 25^\circ C$
3. Value at $T_{ch} = 25^\circ C$, $R_g \geq 50\ \Omega$

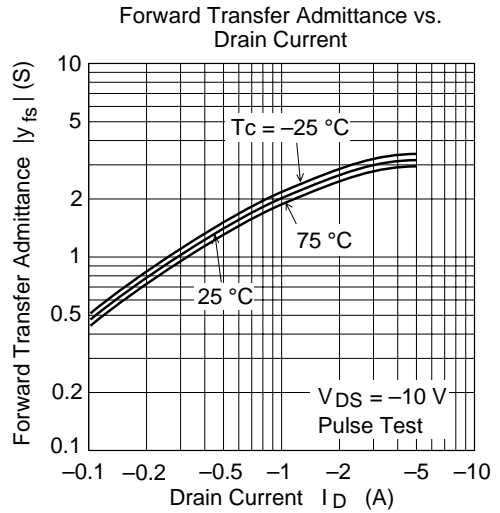
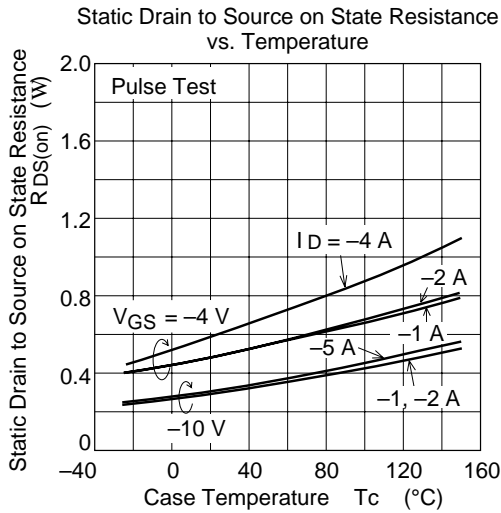
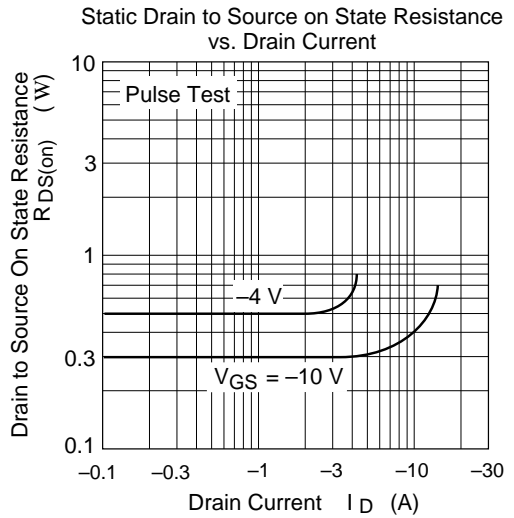
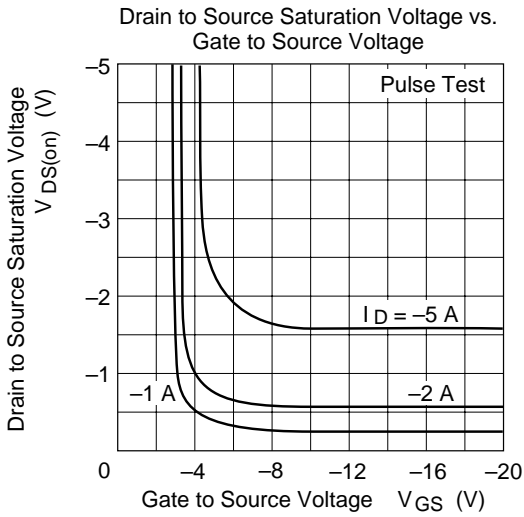
Electrical Characteristics (Ta = 25°C)

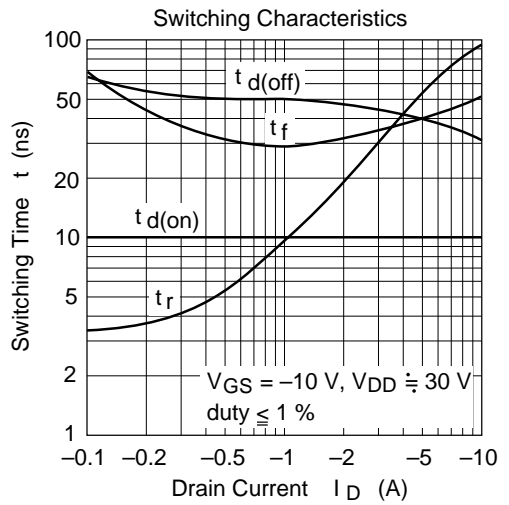
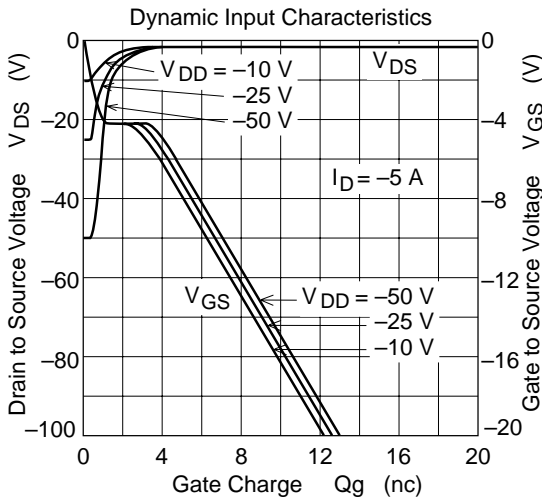
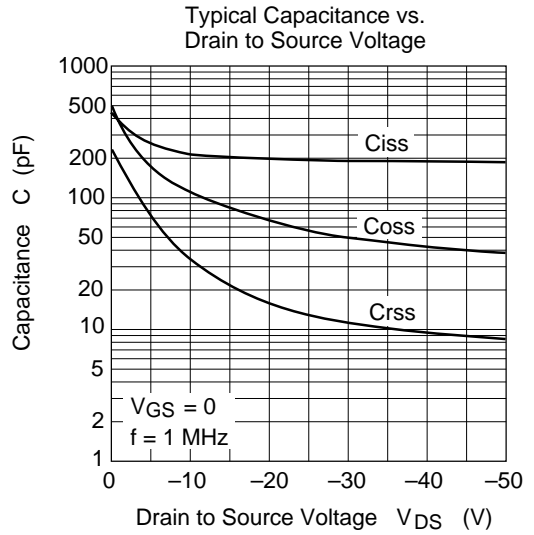
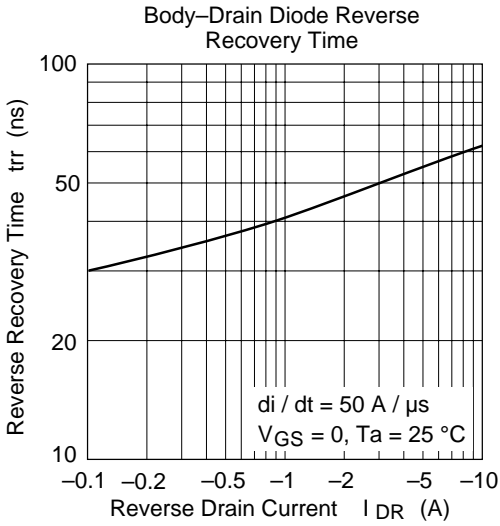
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-60	—	—	V	$I_D = -10\text{mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100\mu\text{A}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-10	μA	$V_{DS} = -60\text{V}, V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16\text{V}, V_{DS} = 0$
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 resistance	$R_{DS(on)}$	—	0.3	0.4	Ω	$I_D = -3\text{A}, V_{GS} = -10\text{V}$ ^{Note4}
	$R_{DS(on)}$	—	0.5	0.8	Ω	$I_D = -3\text{A}, V_{GS} = -4\text{V}$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	1.8	3	—	S	$I_D = -3\text{A}, V_{DS} = -10\text{V}$ ^{Note4}
Input capacitance	Ciss	—	220	—	pF	$V_{DS} = -10\text{V}$
Output capacitance	Coss	—	110	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	—	35	—	pF	f = 1MHz
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$V_{GS} = -10\text{V}, I_D = -3\text{A}$
Rise time	t_r	—	30	—	ns	$R_L = 10\Omega$
Turn-off delay time	$t_{d(off)}$	—	45	—	ns	
Fall time	t_f	—	35	—	ns	
Body-drain diode forward voltage	V_{DF}	—	-1.35	—	V	$I_F = -5\text{A}, V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	55	—	ns	$I_F = -5\text{A}, V_{GS} = 0$ $diF/dt = 50\text{A}/\mu\text{s}$

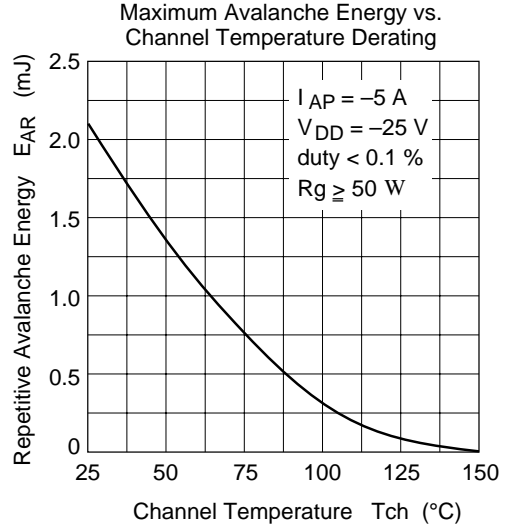
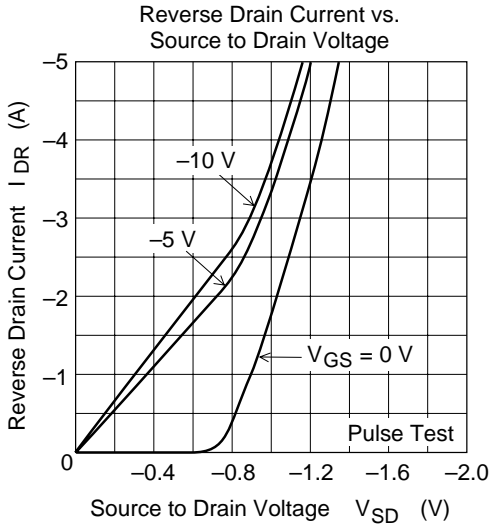
Note: 4. Pulse test

Main Characteristics

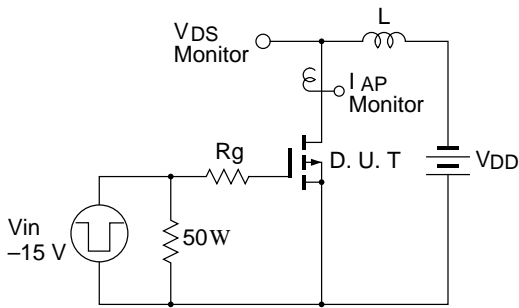






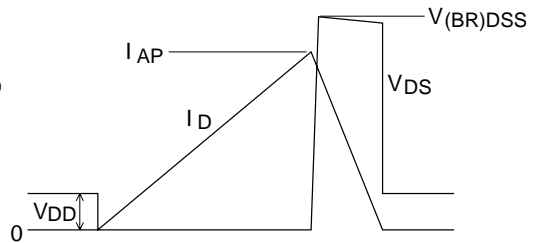


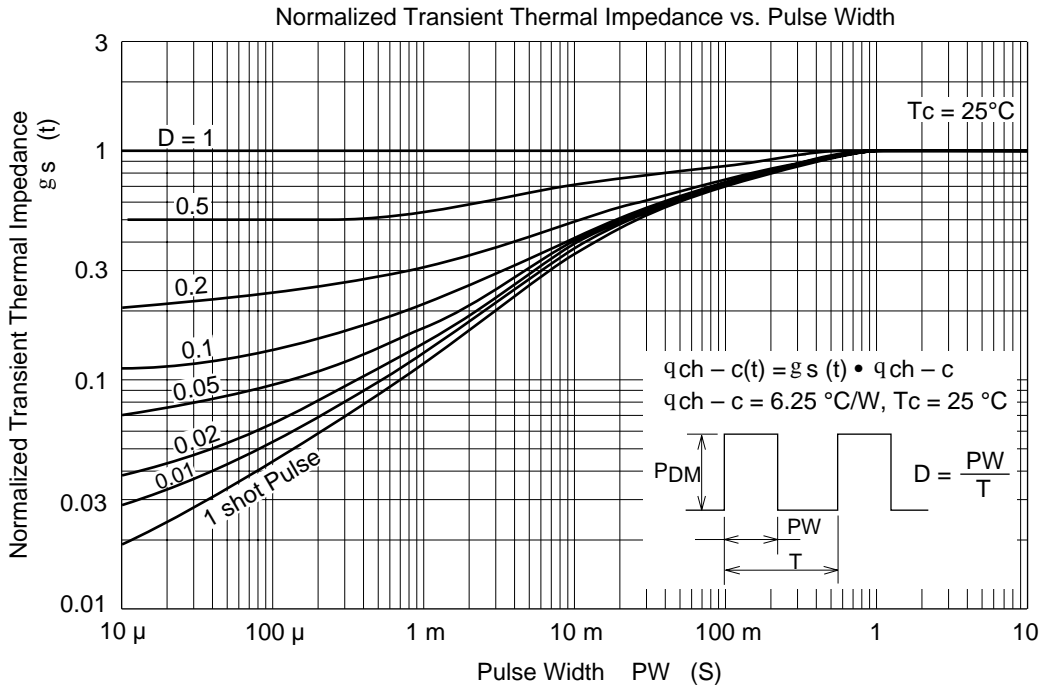
Avalanche Test Circuit



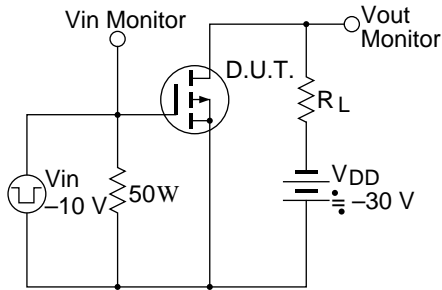
Avalanche Waveform

$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$

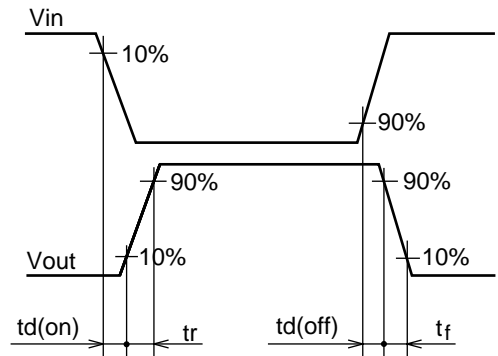




Switching Time Test Circuit

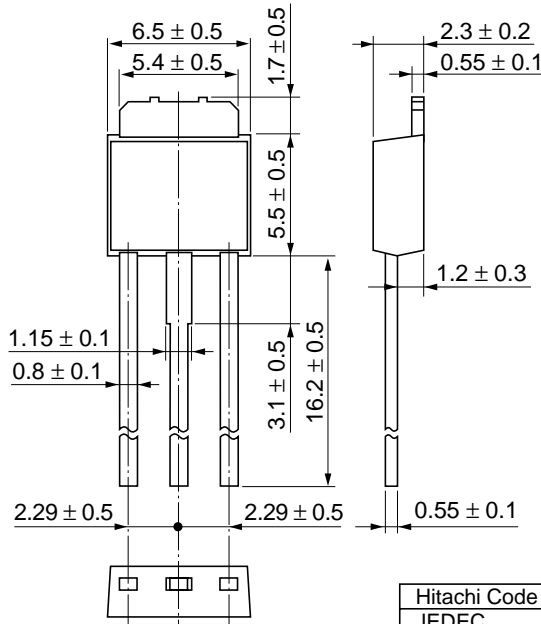


Waveform



Package Dimensions

As of January, 2001
Unit: mm

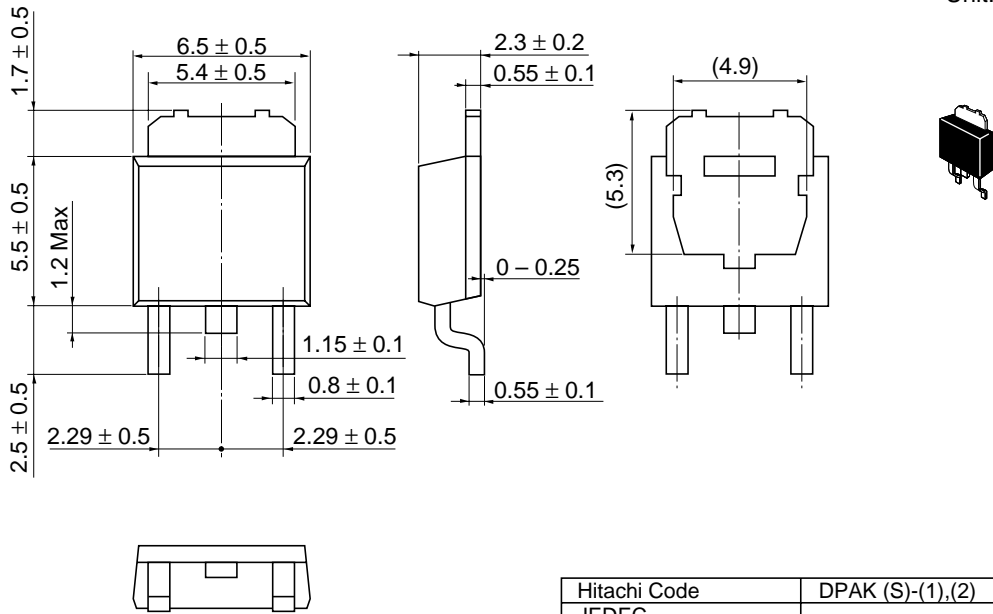


Hitachi Code	DPAK (L)-(1)
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.42 g

2SJ527(L),2SJ527(S)

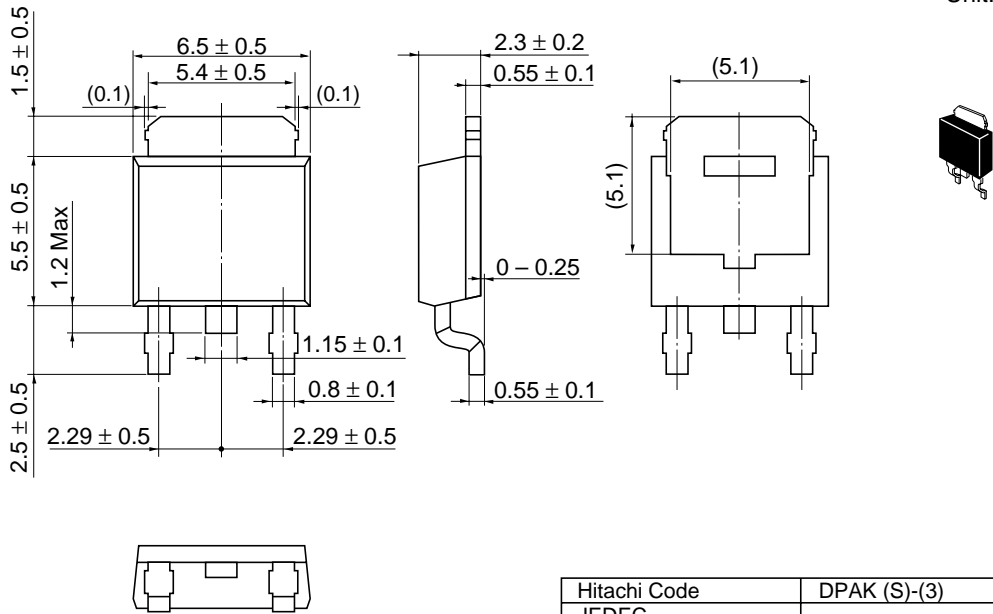
As of January, 2001

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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