

H5N2005DL, H5N2005DS

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

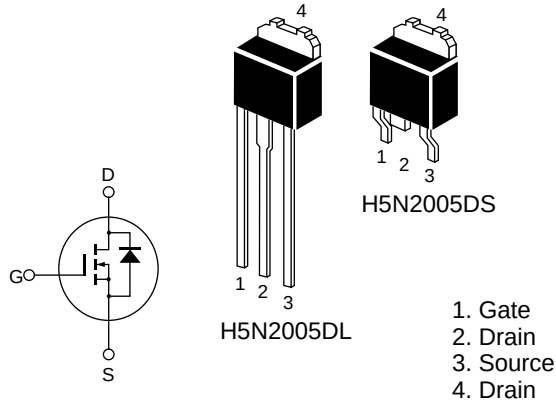
ADE-208-1373 (Z)
Target Specification 1st. Edition
Mar. 2001

Features

- Low on-resistance
- Low drive current
- High speed switching

Outline

DPAK-2



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	200	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D	(6)	A
Drain peak current	$I_{D (pulse)}$ ^{Note 1}	(24)	A
Body-drain diode reverse drain current	I_{DR}	(6)	A
Body-drain diode reverse drain peak current	$I_{DR (pulse)}$ ^{Note 1}	(24)	A
Channel dissipation	P_{ch} ^{Note 2}	25	W
Channel to case thermal impedance	θ_{ch-c}	5	°C/W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

Notes: 1. $PW = 10 \mu s$, duty cycle 1%
2. Value at $T_c = 25^\circ C$

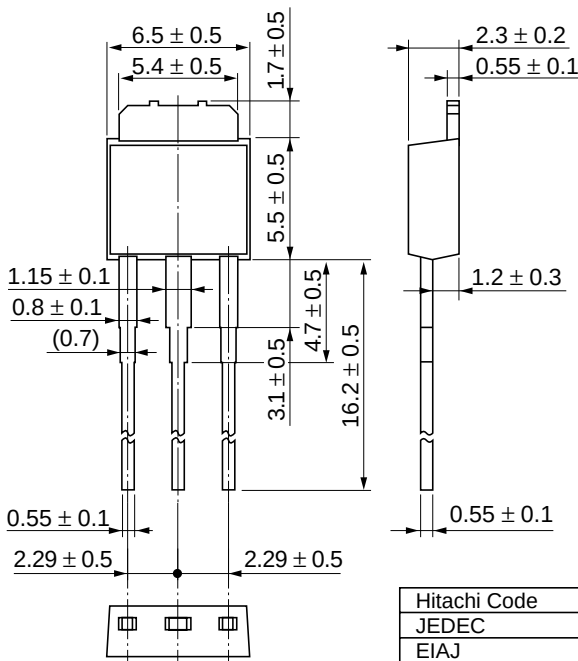
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 200 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	(3.0)	—	(4.5)	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	(0.52)	(0.65)		$I_D = 3 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note 4}
Forward transfer admittance	$ y_{fs} $	(2.0)	(3.4)	—	S	$I_D = 3 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note 4}
Input capacitance	C_{iss}	—	(300)	—	pF	$V_{DS} = 25 \text{ V}$
Output capacitance	C_{oss}	—	(50)	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	(14)	—	pF	$f = 1 \text{ MHz}$
Total Gate charge	Q_g	—	(9.5)	—	nC	$V_{DD} = 160 \text{ V}$
Gate to source charge	Q_{gs}	—	(1.8)	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	Q_{gd}	—	(5.2)	—	nC	$I_D = 6 \text{ A}$
Turn-on delay time	$t_{d(on)}$	—	(19)	—	ns	$I_D = 3 \text{ A}$
Rise time	t_r	—	(16)	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	(44)	—	ns	$R_L = 33.3$
Fall time	t_f	—	(12)	—	ns	$R_g = 10$
Body-drain diode forward voltage	V_{DF}	—	(1.0)	(1.5)	V	$I_F = 6 \text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	(90)	—	ns	$I_F = 6 \text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery charge	Q_{rr}	—	(300)	—	nC	$diF/dt = 100 \text{ A/us}$

Note: 4. Pulse test

Package Dimensions

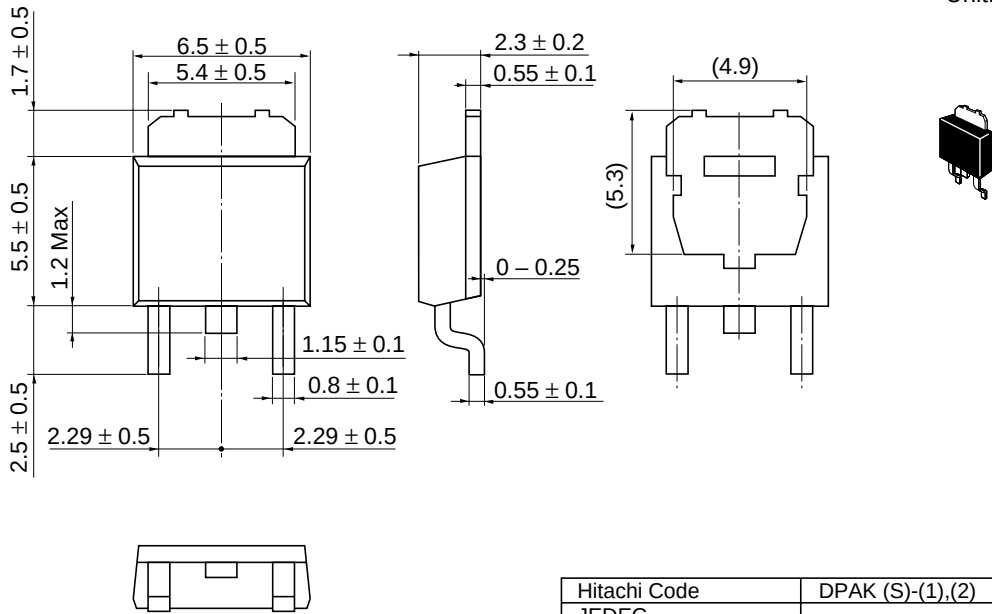
As of January, 2001
Unit: mm



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

As of January, 2001

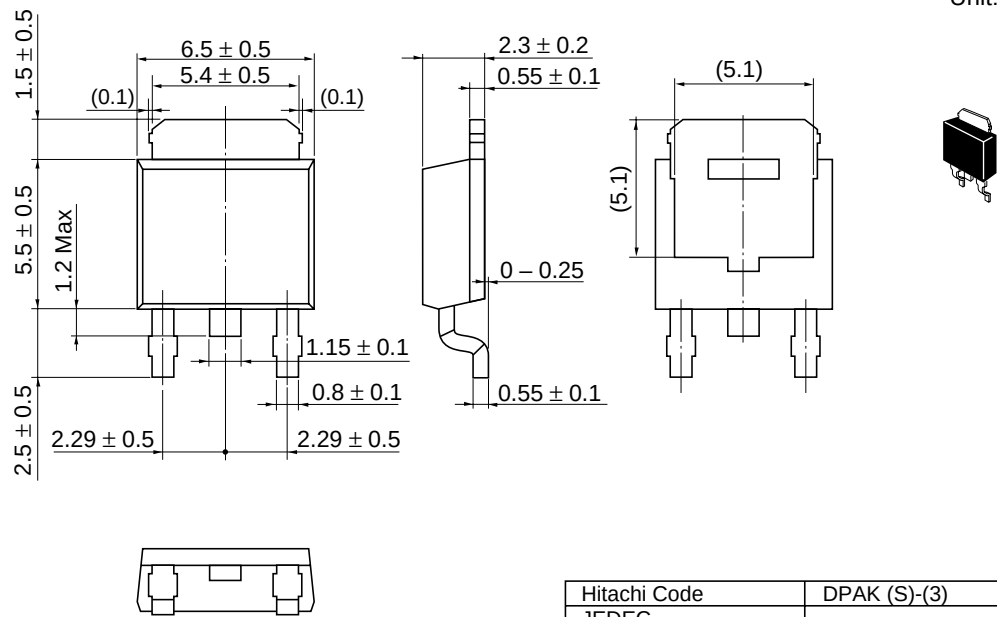
Unit: mm



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

H5N2005DL, H5N2005DS

As of January, 2001
Unit: mm



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

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