

H7P0601DL, H7P0601DS

Silicon P Channel MOS FET
High Speed Power Switching

REJ03G0044-0100Z

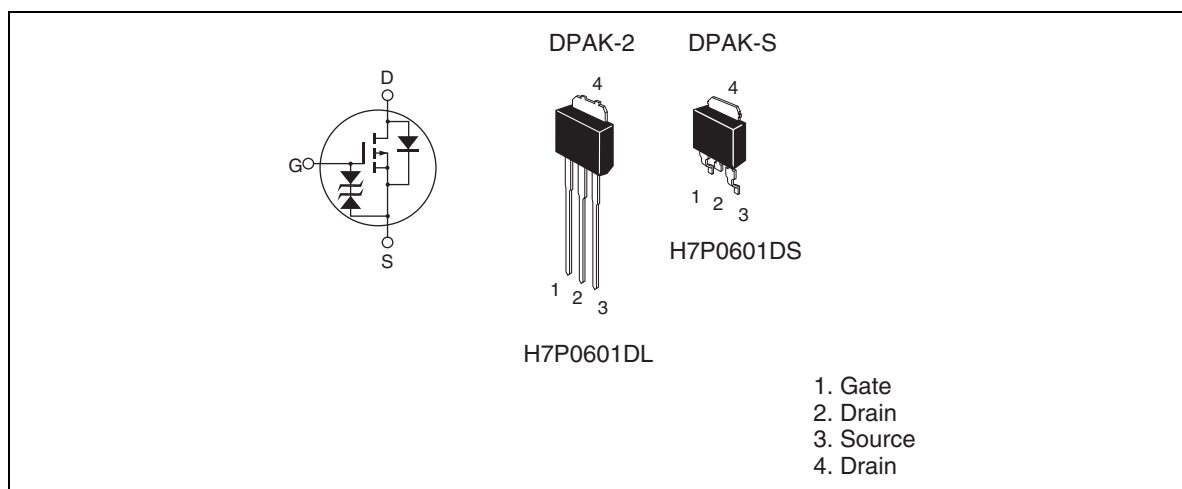
Rev.1.00

Aug.05.2003

Features

- Low on-resistance
 $R_{DS(on)} = 40 \text{ m}\Omega$ typ.
- Low drive current
- 4.5 V gate drive device can driven from 5 V source

Outline



Absolute Maximum Ratings

(T_a = 25°C)

Item	Symbol	Rating	Unit
Drain to source voltage	V _{DSS}	−60	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	−20	A
Drain peak current	I _D (pulse) ^{Note1}	−80	A
Body-drain diode reverse drain current	I _{DR}	−20	A
Avalanche current	I _{AP} ^{Note3}	−12	A
Avalanche energy	E _{AR} ^{Note3}	12.3	mJ
Channel dissipation	P _{ch} ^{Note2}	25	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%
2. Value at T_c = 25°C
3. Value at T_{ch} = 25°C, R_g ≥ 50 Ω

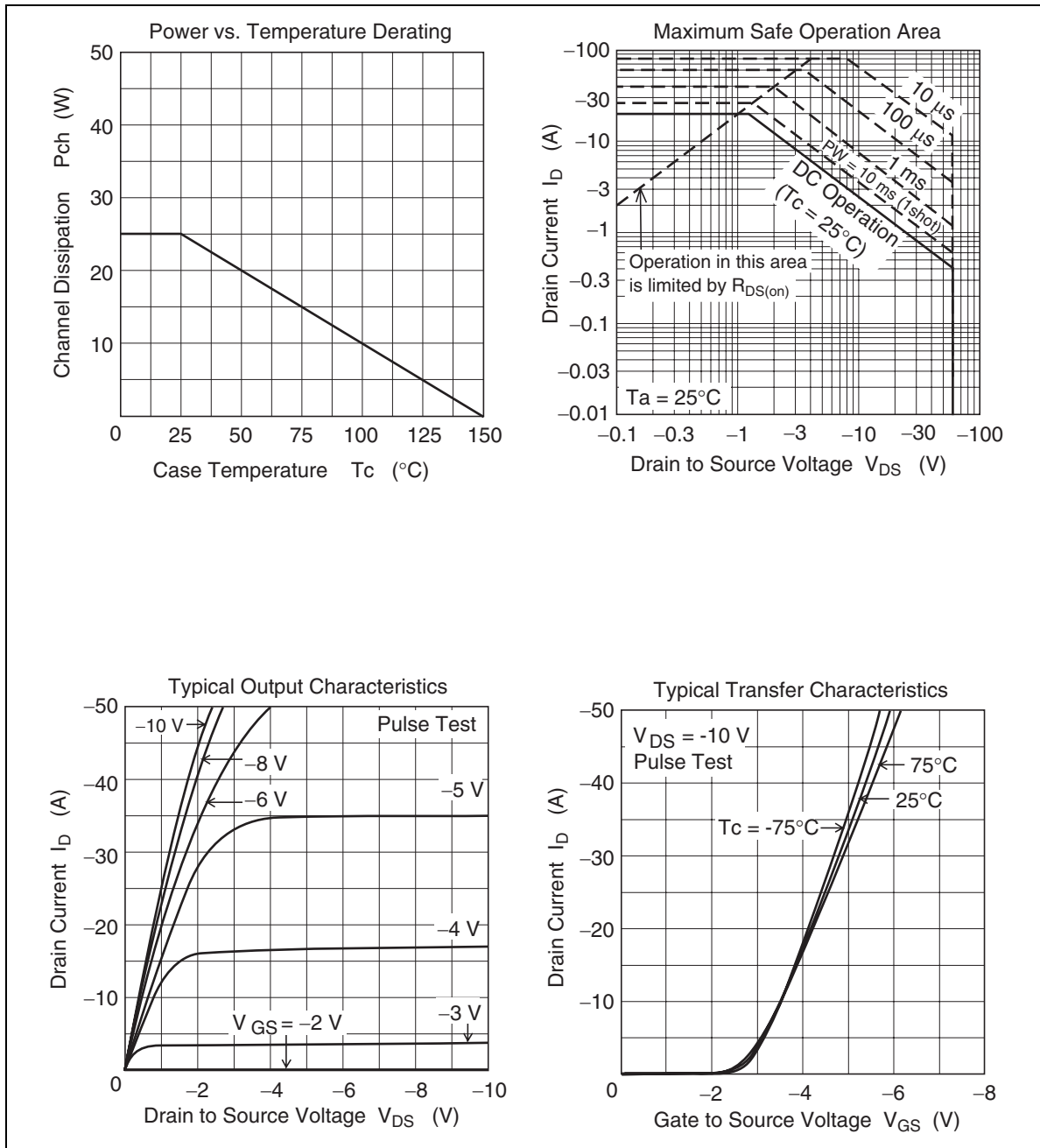
Electrical Characteristics

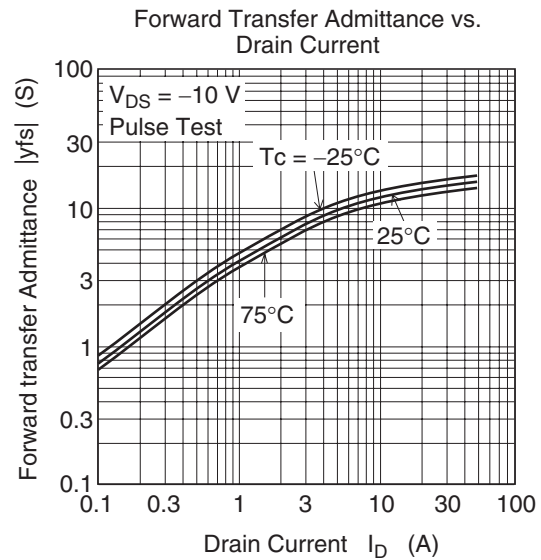
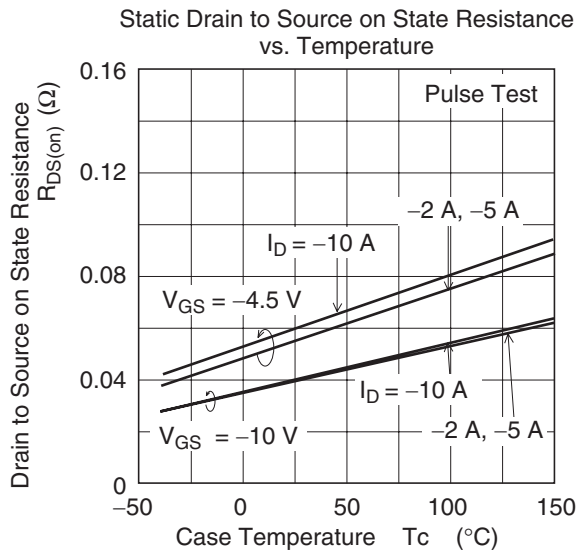
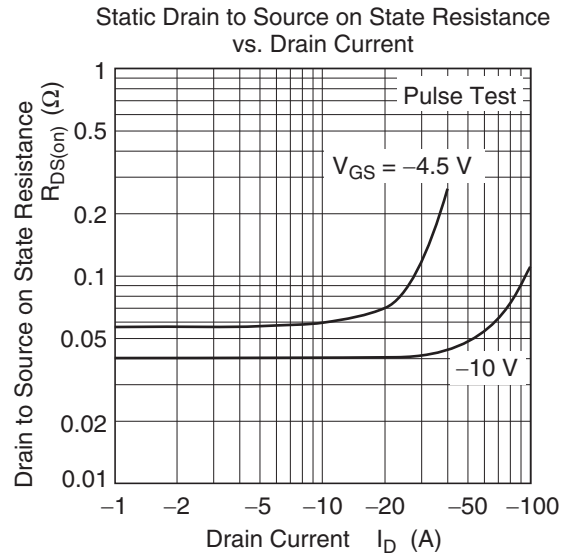
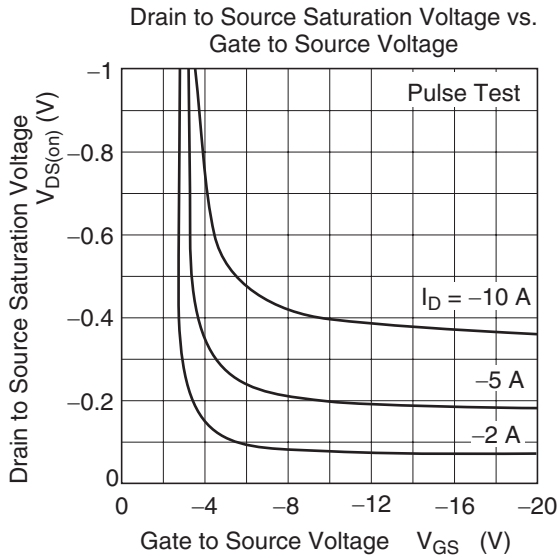
(Ta = 25°C)

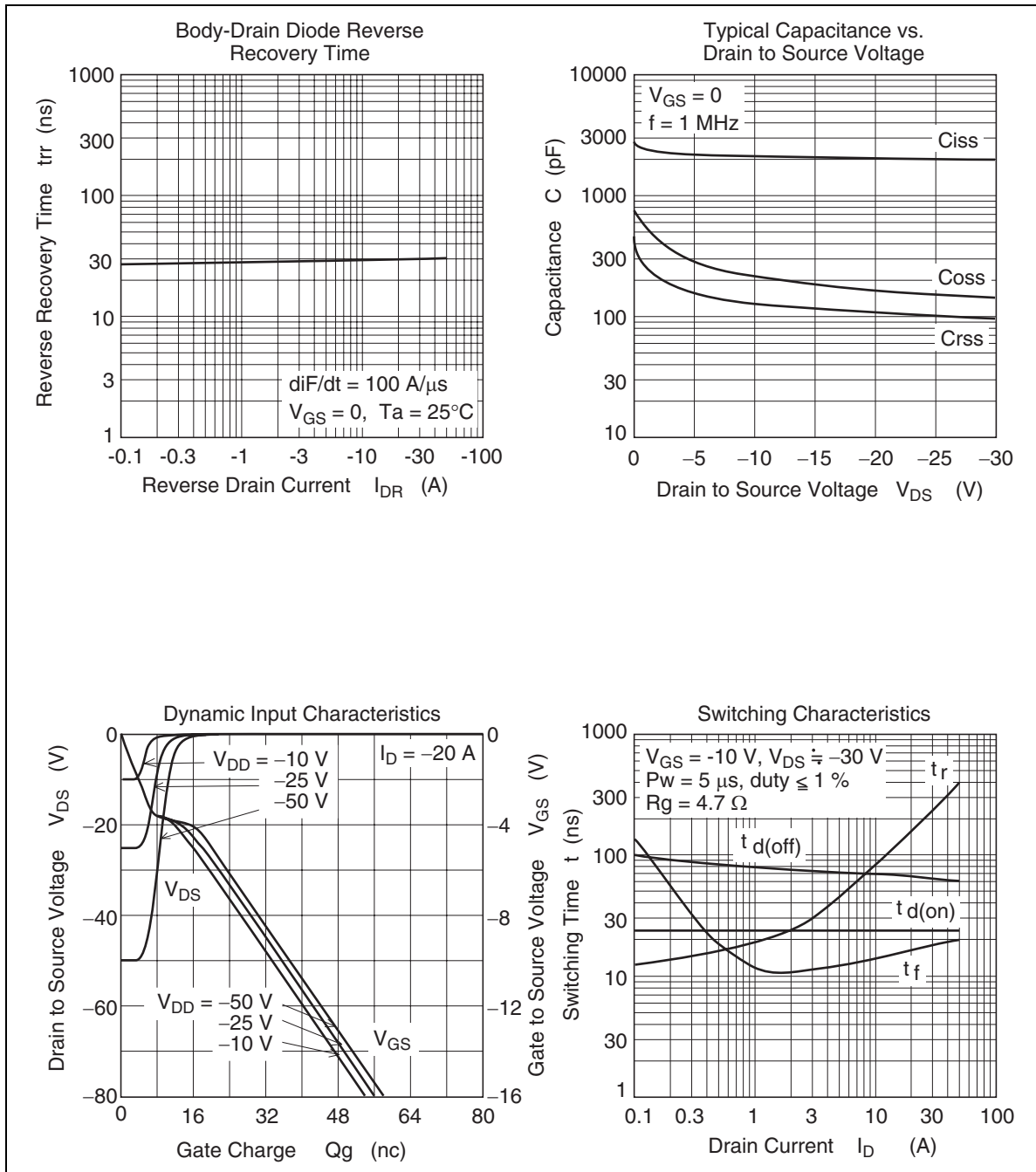
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-60	—	—	V	$I_D = -10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-10	μA	$V_{DS} = -60 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-1.0	—	-2.5	V	$I_D = -1 \text{ mA}$, $V_{DS} = -10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	40	50	m Ω	$I_D = -10 \text{ A}$, $V_{GS} = -10 \text{ V}$ ^{Note1}
		—	60	85	m Ω	$I_D = -5 \text{ A}$, $V_{GS} = -4.5 \text{ V}$ ^{Note1}
Forward transfer admittance	$ y_{fs} $	7.2	12	—	S	$I_D = -10 \text{ A}$, $V_{DS} = -10 \text{ V}$ ^{Note1}
Input capacitance	C_{iss}	—	2200	—	pF	$V_{DS} = -10 \text{ V}$
Output capacitance	C_{oss}	—	220	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	130	—	pF	$f = 1 \text{ MHz}$
Total gate charge	Q_g	—	37	—	nC	$V_{DD} = -25 \text{ V}$
Gate to source charge	Q_{gs}	—	6.5	—	nC	$V_{GS} = -10 \text{ V}$
Gate to drain charge	Q_{gd}	—	8	—	nC	$I_D = -20 \text{ A}$
Turn-on delay time	$t_{d(on)}$	—	25	—	ns	$V_{GS} = -10 \text{ V}$, $I_D = -10 \text{ A}$
Rise time	t_r	—	85	—	ns	$R_L = 3.0 \text{ }\Omega$
Turn-off delay time	$t_{d(off)}$	—	70	—	ns	$R_g = 4.7 \text{ }\Omega$
Fall time	t_f	—	15	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.95	—	V	$I_F = -20 \text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	30	—	ns	$I_F = -20 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$

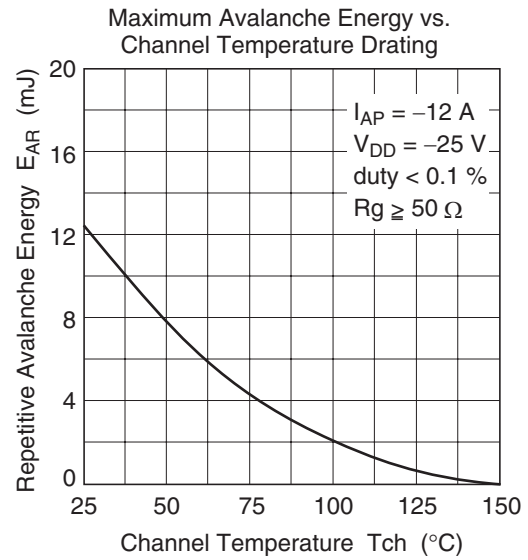
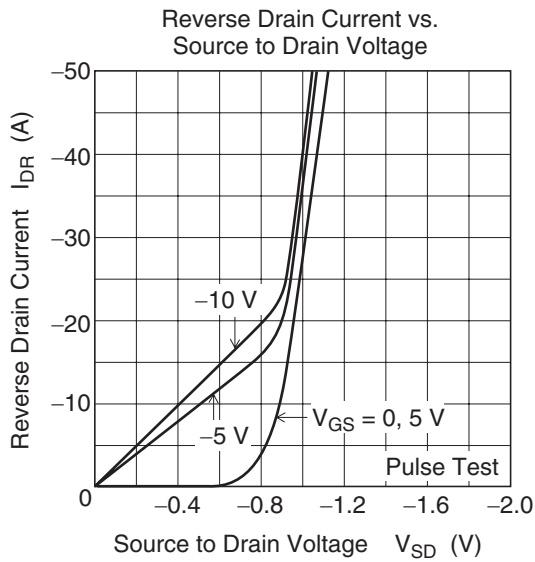
Note: 1. Pulse test

Main Characteristics

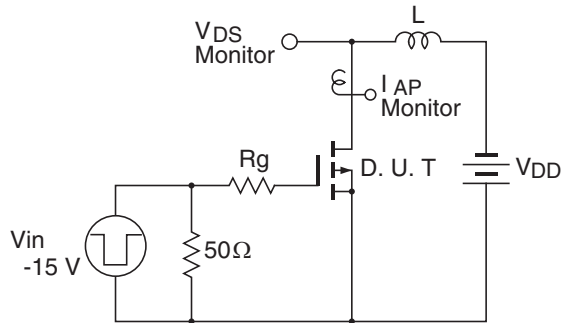




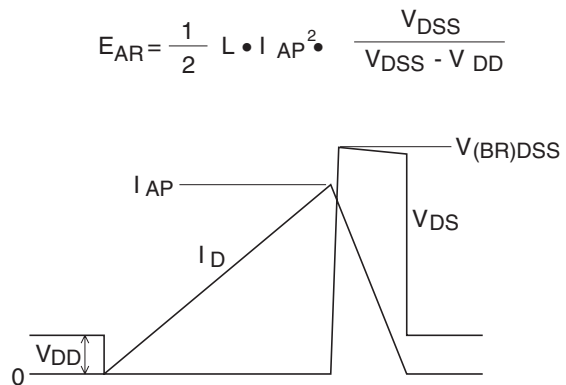


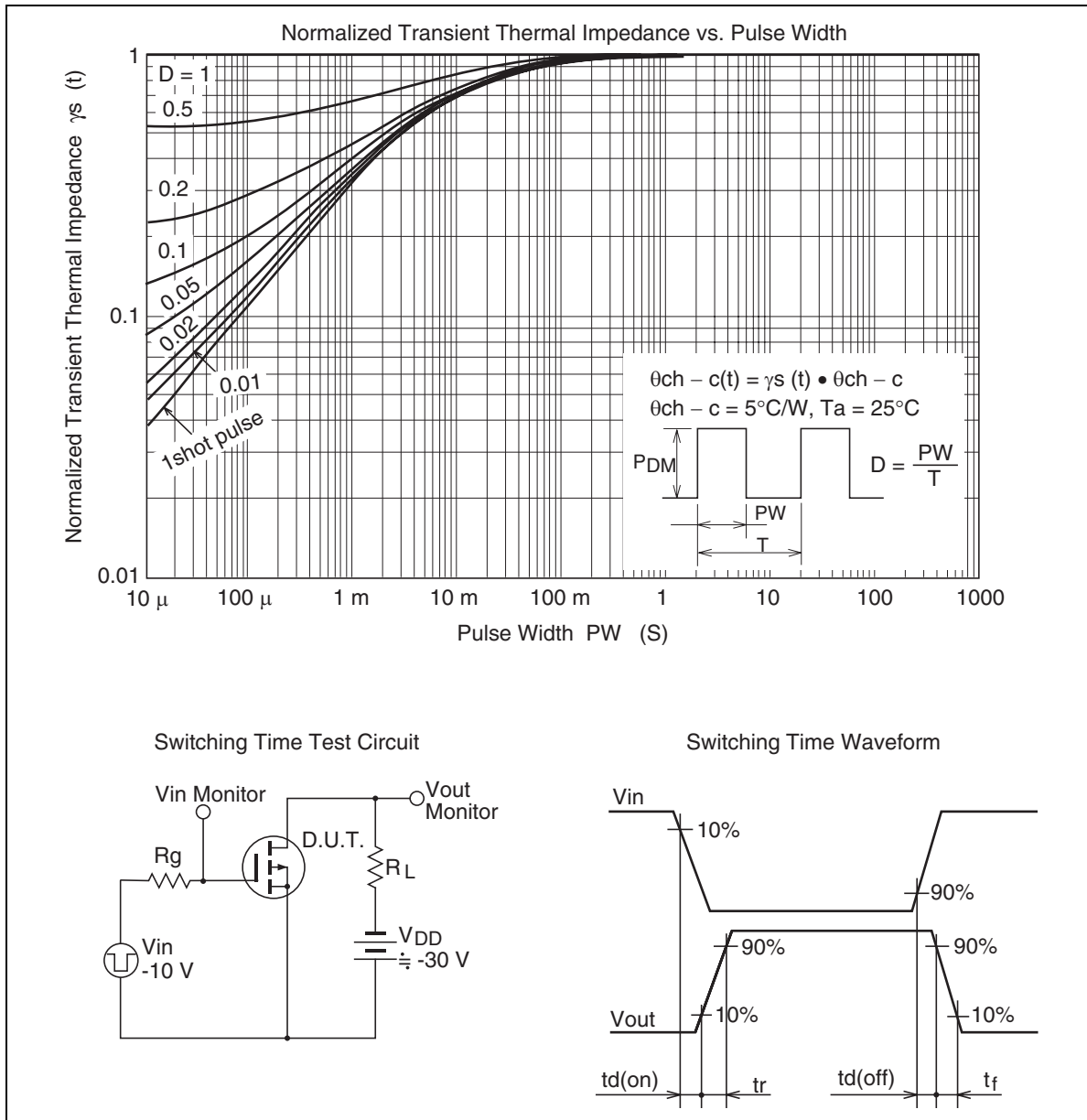


Avalanche Test Circuit



Avalanche Waveform

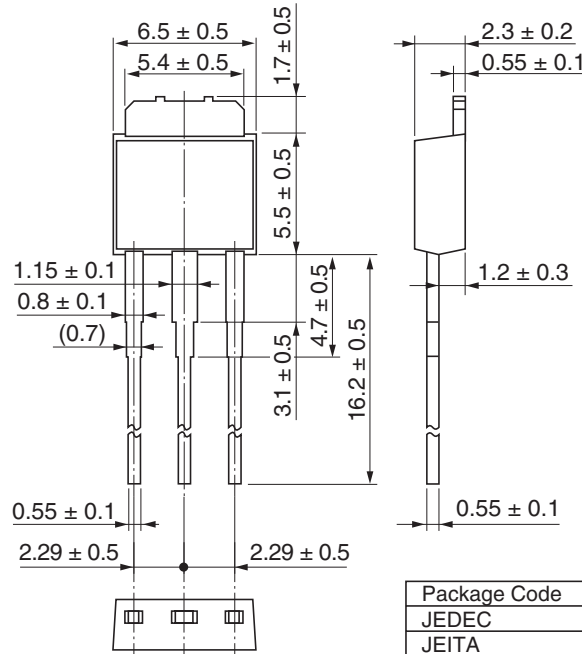




Package Dimensions

• H7P0601DL

As of January, 2003
Unit: mm

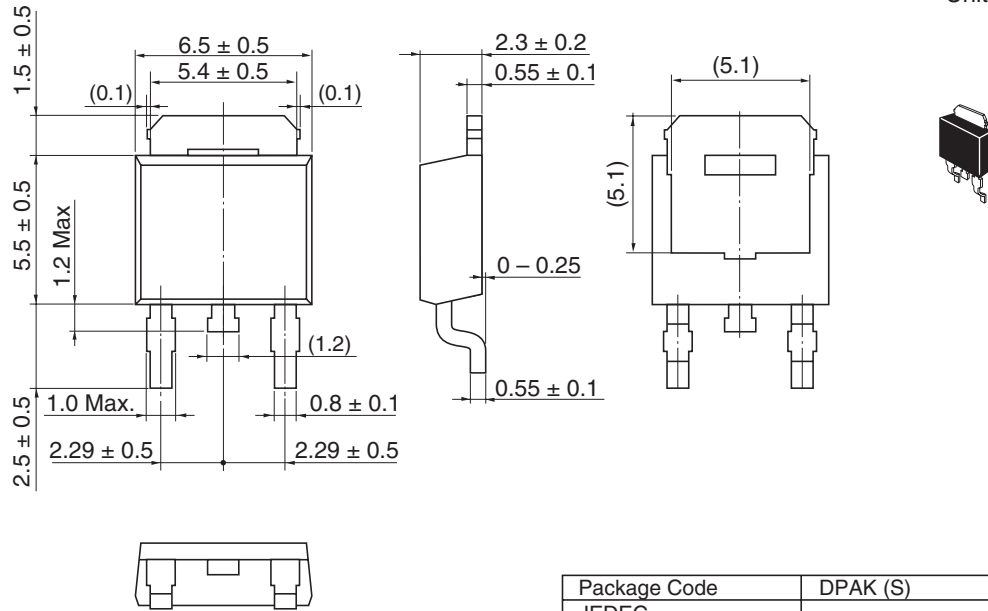


Package Code	DPAK (L)-(2)
JEDEC	—
JEITA	—
Mass (reference value)	0.42 g

• H7P0601DS

As of January, 2003

Unit: mm



Package Code	DPAK (S)
JEDEC	—
JEITA	Conforms
Mass (reference value)	0.28 g

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