

H7N1004LD, H7N1004LS, H7N1004LM

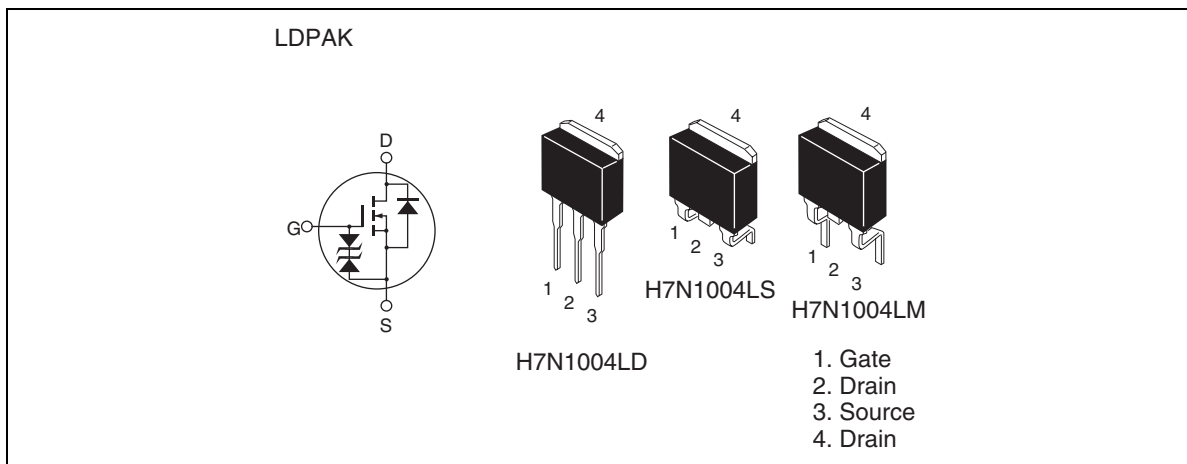
Silicon N-Channel MOSFET
High-Speed Power Switching

REJ03G0072-0600Z
(Previous ADE-208-1552E(Z))
Rev.6.00
Aug.27.2003

Features

- Low on-resistance
- $R_{DS(on)} = 25 \text{ m}\Omega$ typ.
- Low drive current
- Available for 4.5 V gate drive

Outline



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V _{DSS}	100	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	30	A
Drain peak current	I _D (pulse) ^{Note 1}	100	A
Body-drain diode reverse drain current	I _{DR}	30	A
Avalanche current	I _{AP} ^{Note 3}	15	A
Avalanche energy	E _{AR} ^{Note 3}	22.5	mJ
Channel dissipation	P _{ch} * ^{Note 2}	50	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 Tc = 25°C
3. Value at Tch = 25°C, Rg ≥ 50 Ω

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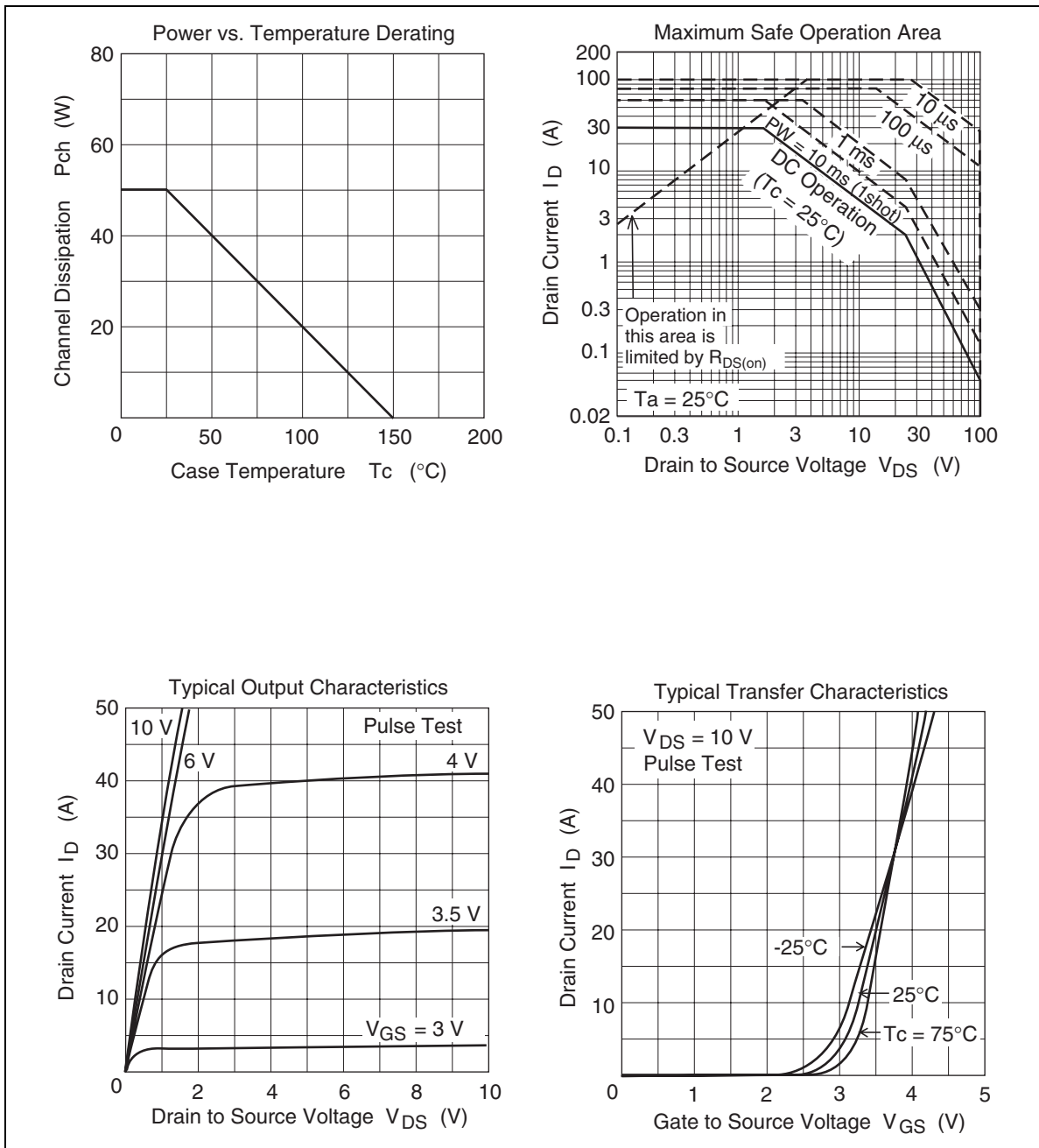
Electrical Characteristics

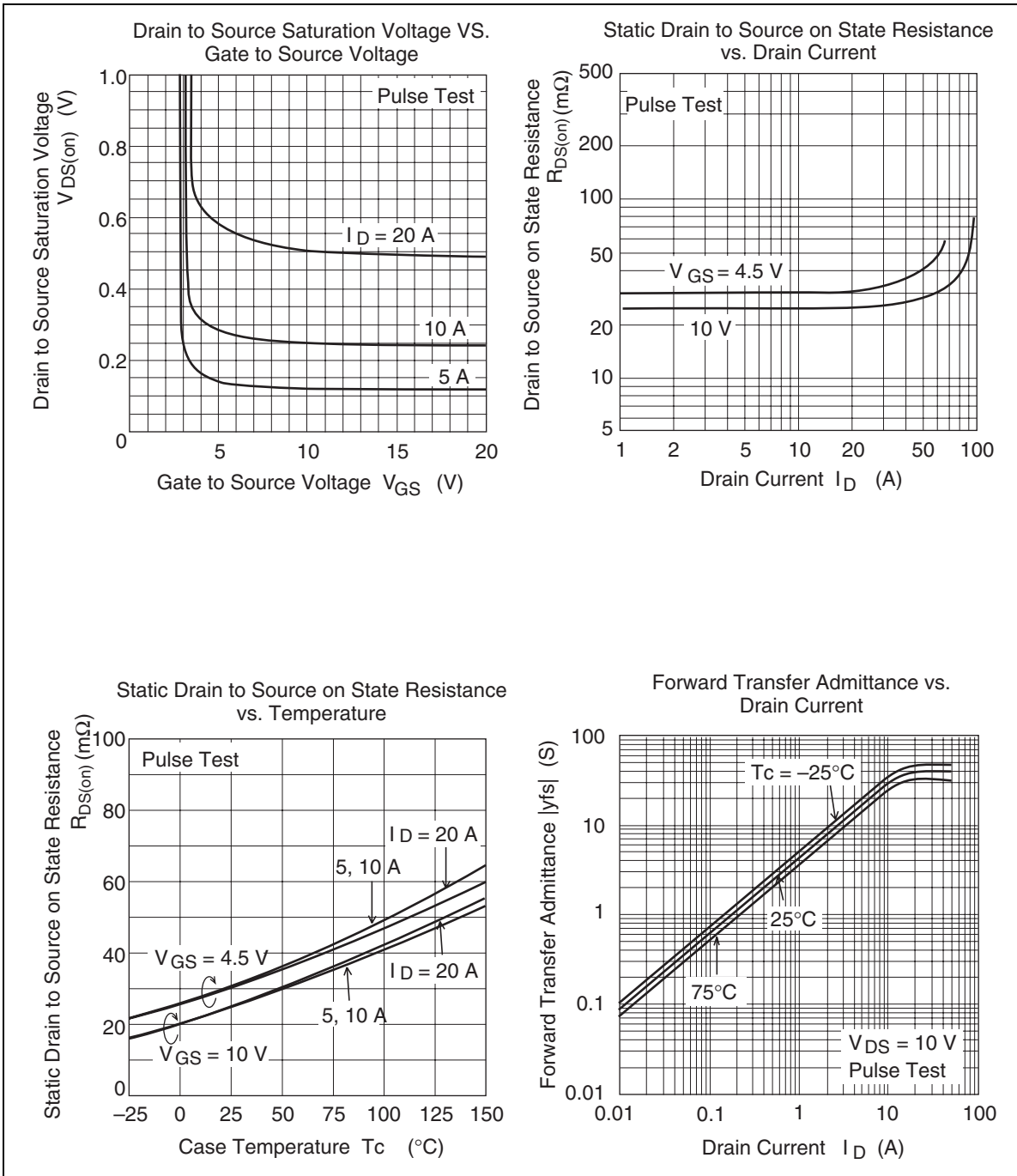
(T_a = 25°C)

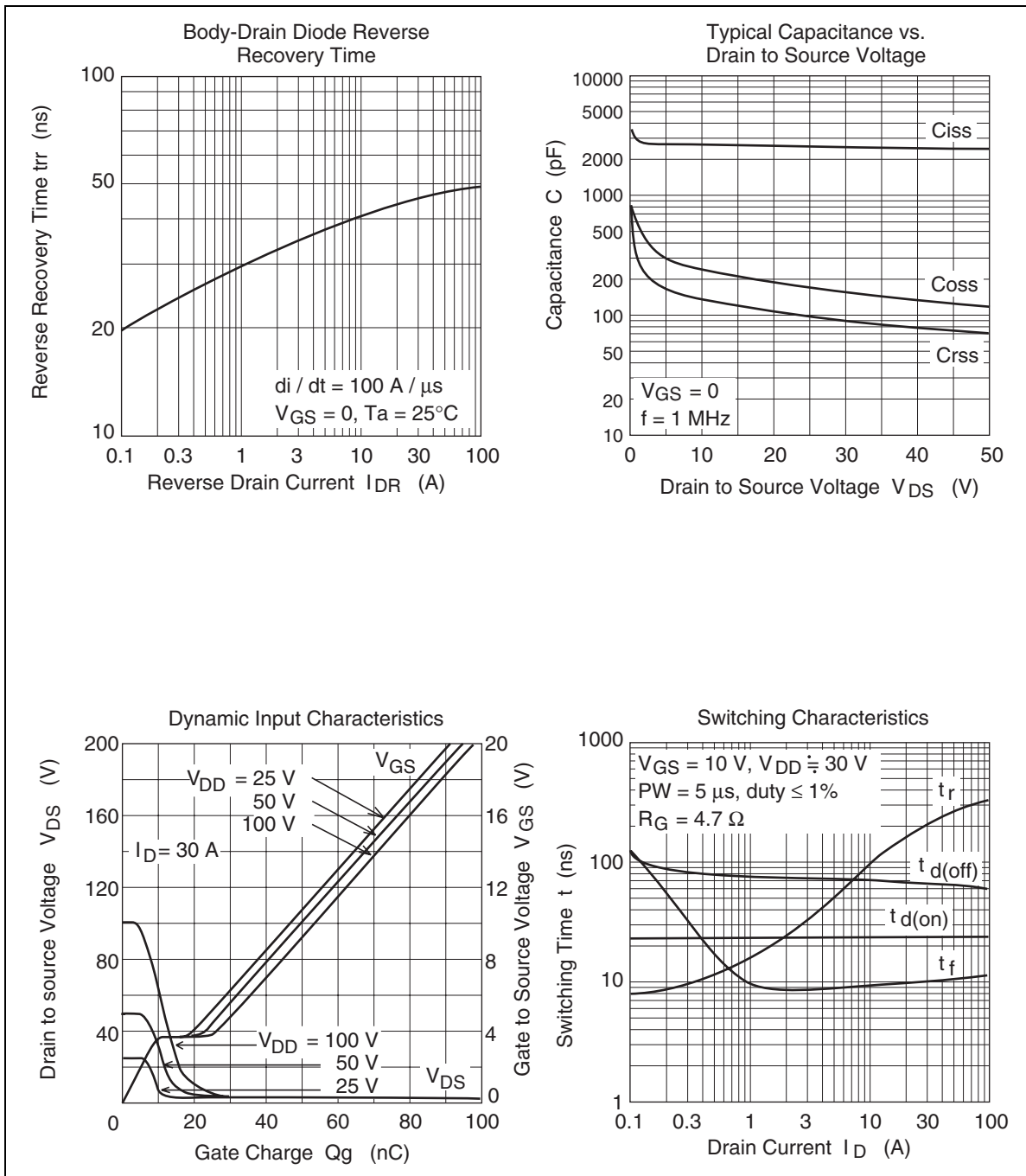
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	V _{(BR)DSS}	100	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR)GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±16 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 100 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	1.5	—	2.5	V	I _D = 1 mA, V _{DS} = 10 V ^{Note 1}
Static drain to source on state resistance	R _{DS(on)}	—	25	35	mΩ	I _D = 15 A, V _{GS} = 10 V ^{Note 1}
		—	30	45	mΩ	I _D = 15 A, V _{GS} = 4.5 V ^{Note 1}
Forward transfer admittance	y _{fs}	22	37	—	S	I _D = 15 A, V _{GS} = 10 V ^{Note 1}
Input capacitance	C _{iss}	—	2800	—	pF	V _{DS} = 10 V
Output capacitance	C _{oss}	—	240	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	140	—	pF	f = 1 MHz
Total gate charge	Q _g	—	50	—	nC	V _{DD} = 50 V
Gate to source charge	Q _{gs}	—	9	—	nC	V _{GS} = 10 V
Gate to drain charge	Q _{gd}	—	11	—	nC	I _D = 30 A
Turn-on delay time	t _{d(on)}	—	23	—	ns	V _{GS} = 10 V, I _D = 15 A
Rise time	t _r	—	120	—	ns	R _L = 2 Ω
Turn-off delay time	t _{d(off)}	—	70	—	ns	R _g = 4.7 Ω
Fall time	t _f	—	9.5	—	ns	
Body-drain diode forward voltage	V _{DF}	—	0.9	—	V	I _F = 30 A, V _{GS} = 0
Body-drain diode reverse recovery time	t _{rr}	—	47	—	ns	I _F = 30 A, V _{GS} = 0 diF/dt = 100 A/μs

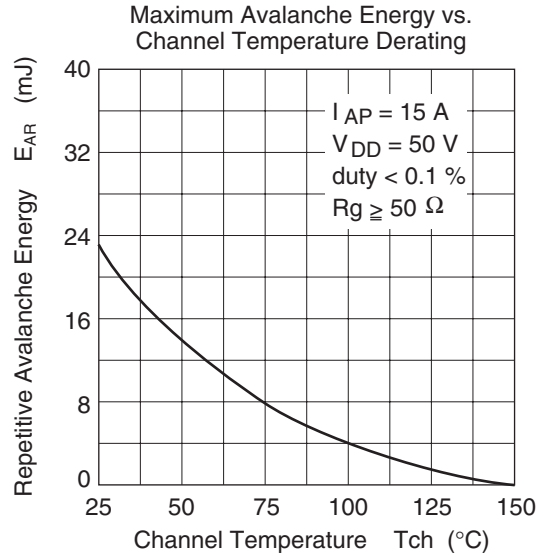
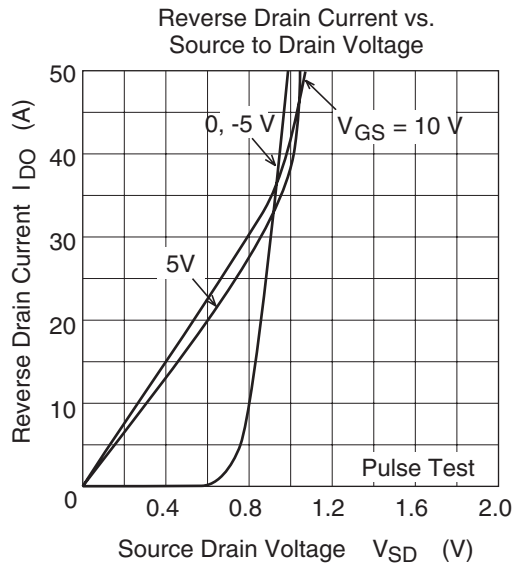
Notes: 1. Pulse test

Main Characteristics

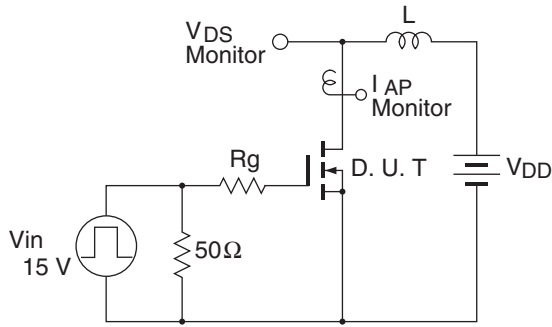




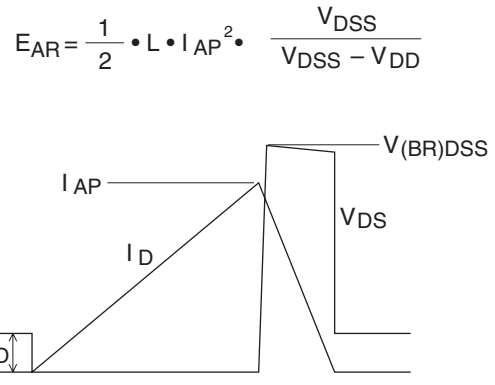


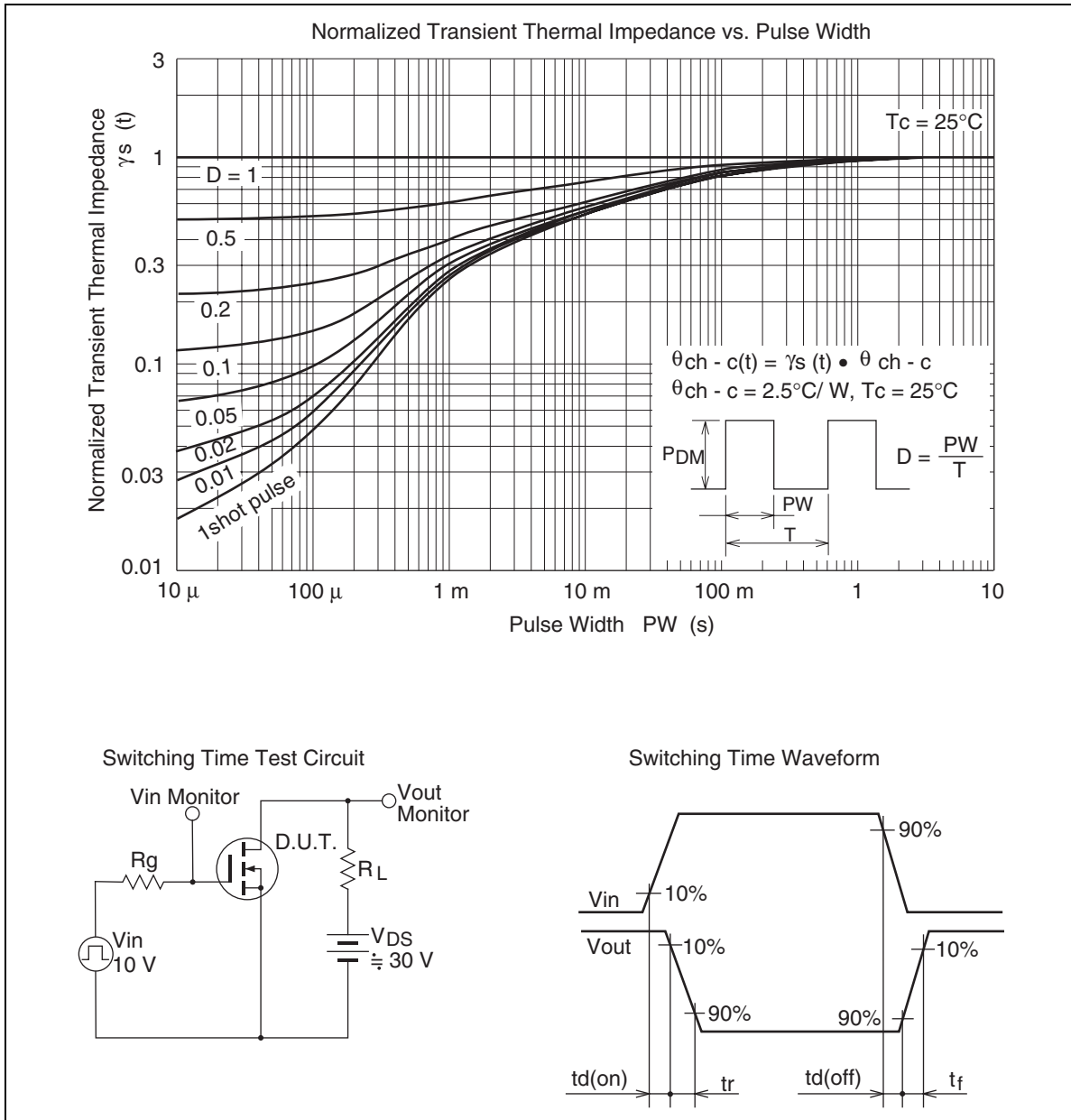


Avalanche Test Circuit



Avalanche Waveform

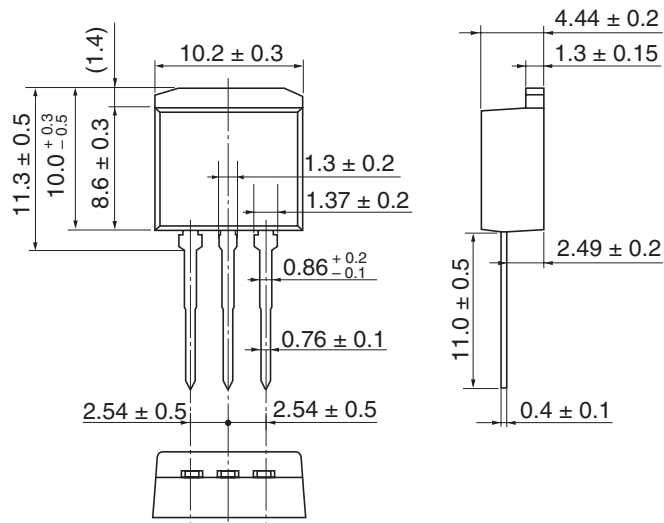




Package Dimensions

• H7N1004LD

As of January, 2003
Unit: mm

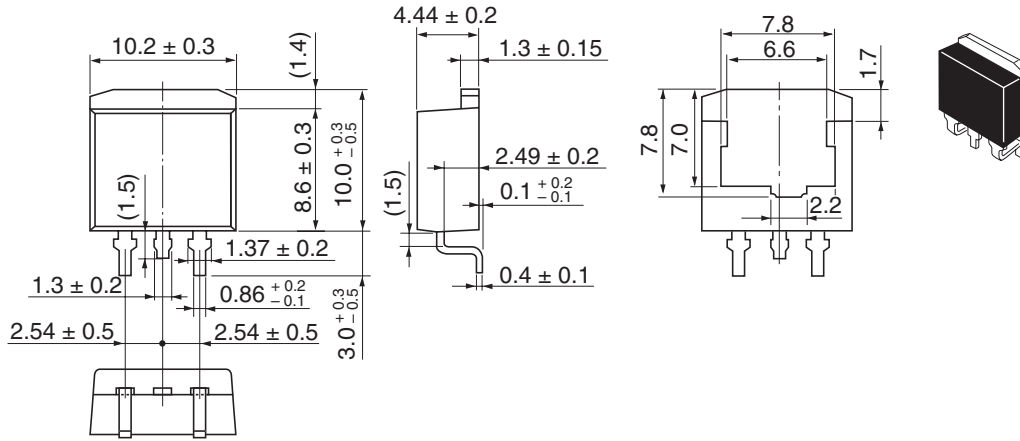


Package Code	LDBAK (L)
JEDEC	—
JEITA	—
Mass (reference value)	1.40 g

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• H7N1004LS

As of January, 2003
Unit: mm

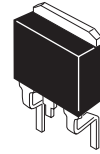
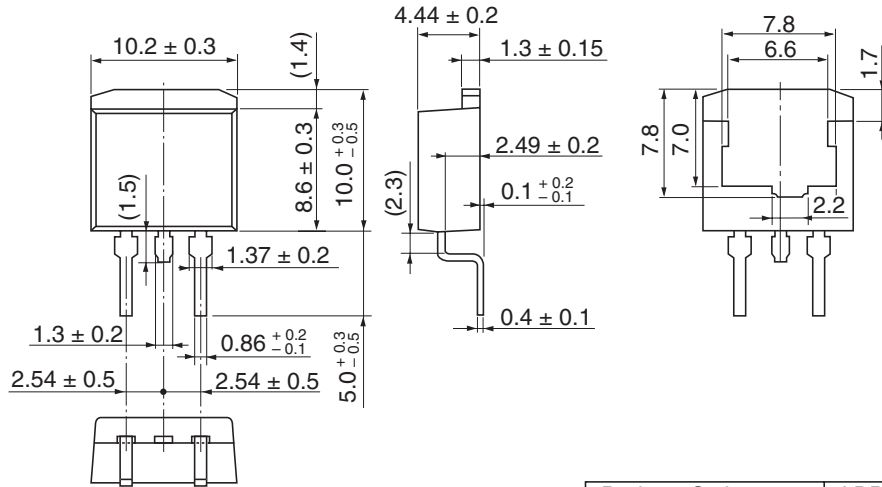


Package Code	LDPAK (S)-(1)
JEDEC	—
JEITA	—
Mass (reference value)	1.30 g

H7N1004LD, H7N1004LS, H7N1004LM

• H7N1004LM

As of January, 2003
Unit: mm



Package Code	LDPAK (S)-(2)
JEDEC	—
JEITA	—
Mass (reference value)	1.35 g

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