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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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GN4014ZB4LD, GN4014ZB4LS, GN4014ZB4LM

Silicon IGBT Ignition Coil Driver

REJ03G1249-0300

Rev.3.00

Jun 01, 2009

Features

- Including Clamping Zener
 $V_{CL} = 400 \text{ V}(\text{typ})$
- Low saturation Voltage
 $V_{CE(\text{sat})} = 1.4 \text{ V}(\text{typ})$
- SMD package
LDBPAK

Outline

RENESAS Package code: PRSS0004AE-A
(Package name: LDBPAK(L))

RENESAS Package code: PRSS0004AE-B
(Package name: LDBPAK(S)-(1))

1. Gate
2. Collector
3. Emitter
4. Collector

Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Collector to emitter voltage	V_{CES}	370	V
Gate to Emitter voltage	V_{GES}	± 20	V
Emitter to Collector voltage	V_{ECS}	24	V
Collector current	I_C	14	A
Collector peak current	$i_{C(\text{peak})}$	18	A
Collector power dissipation	P_C ^{Note1}	60	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

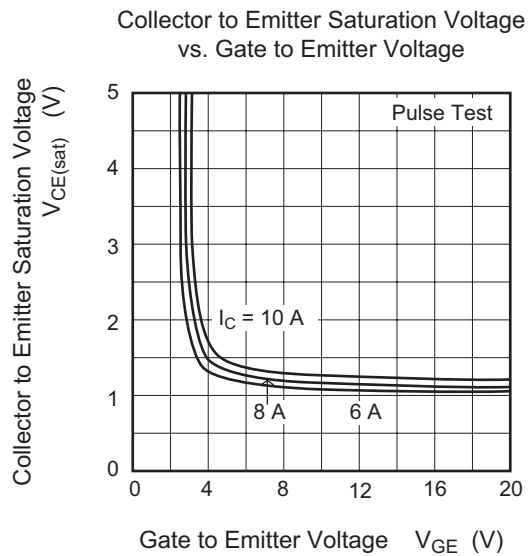
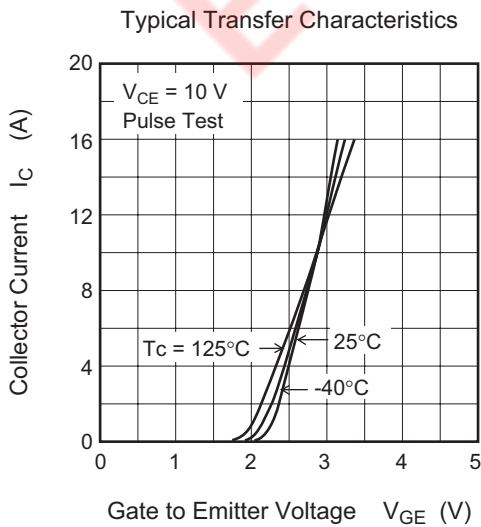
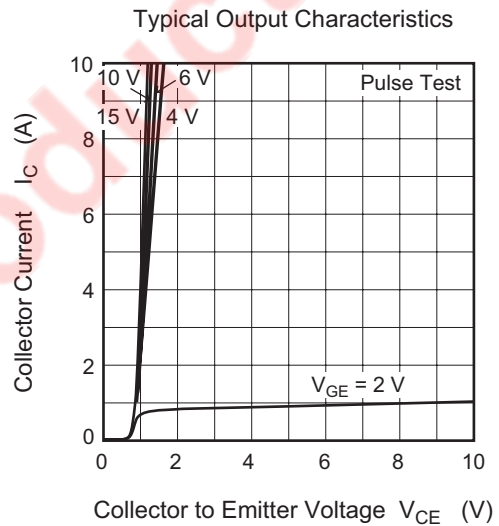
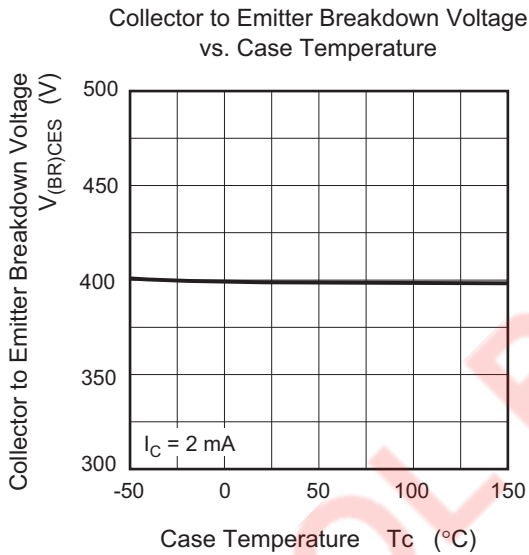
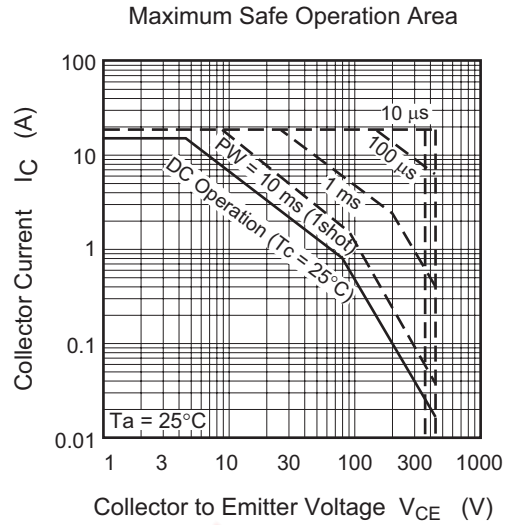
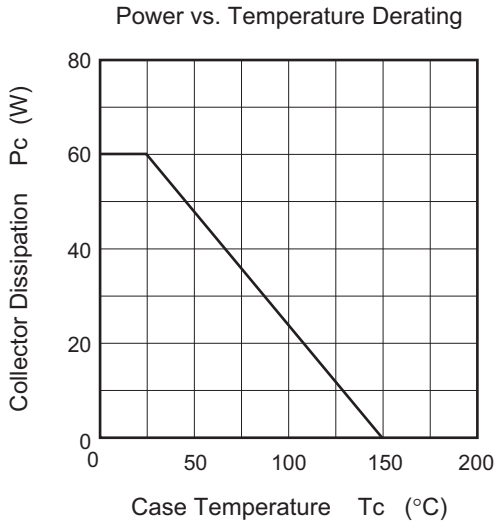
Notes: 1. Value at $T_c = 25^\circ\text{C}$

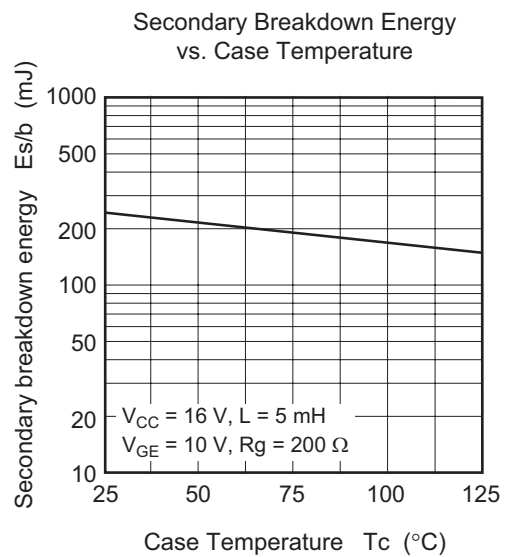
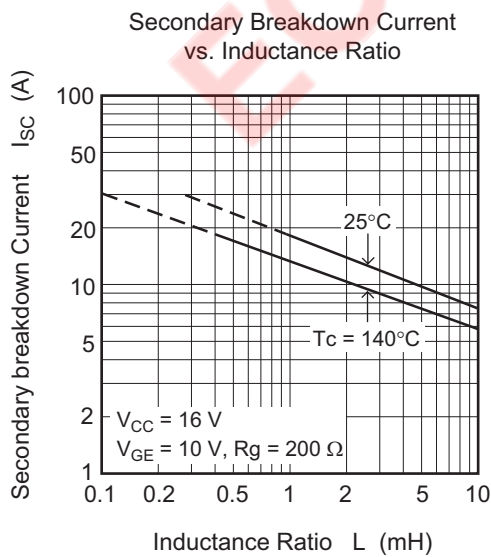
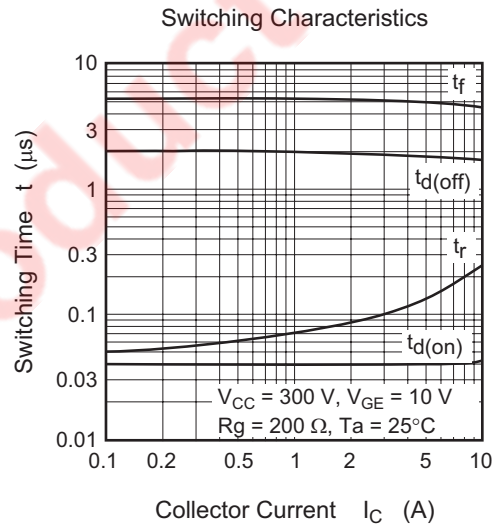
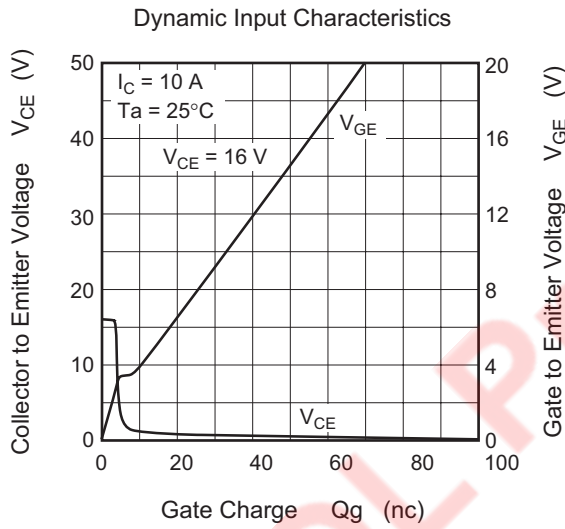
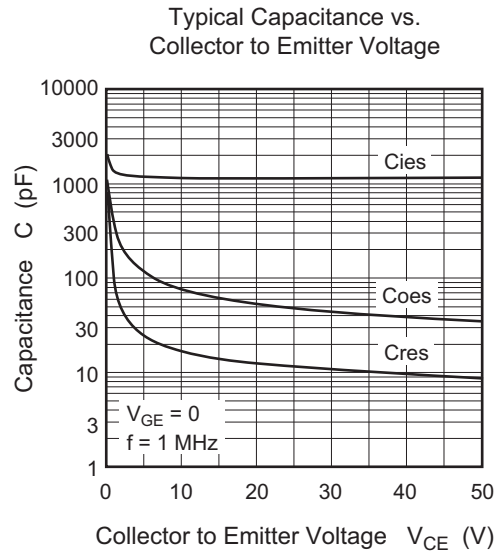
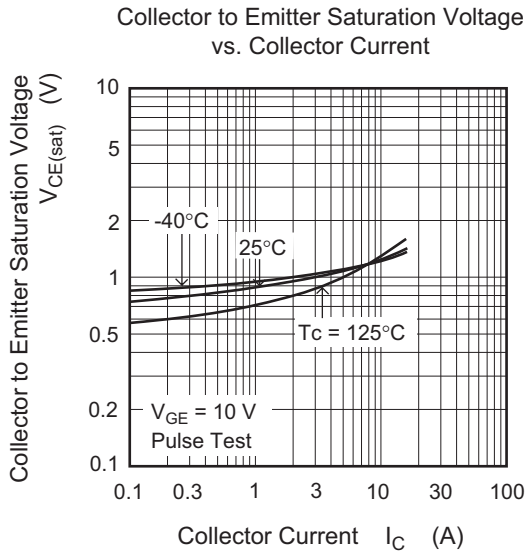
Electrical Characteristics

(Ta = 25°C)

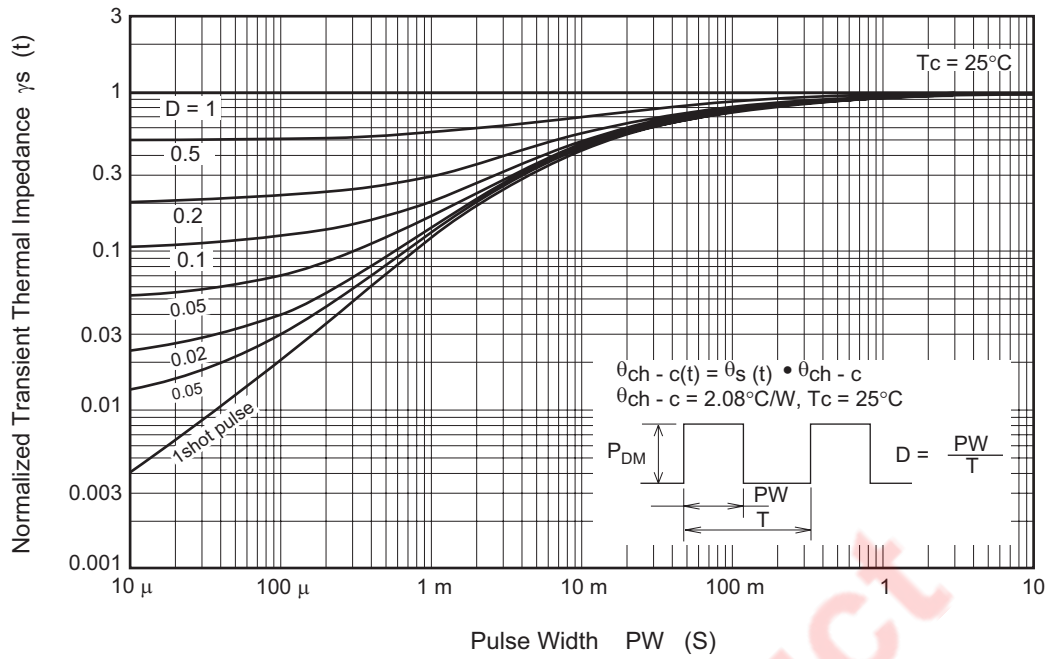
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector to Emitter breakdown voltage	$V_{(BR)CES}$	370	400	430	V	$I_C = 2 \text{ mA}$, $V_{GE} = 0 \text{ V}$
Gate to Emitter breakdown voltage	$V_{(BR)GES}$	± 20	—	—	V	$I_G = \pm 100 \mu\text{A}$, $V_{CE} = 0 \text{ V}$
Collector cutoff current	I_{CES}	—	—	100	μA	$V_{CE} = 300 \text{ V}$, $V_{GE} = 0 \text{ V}$
Gate cutoff current	I_{GES}	—	—	± 100	μA	$V_{GE} = \pm 20 \text{ V}$, $V_{CE} = 0 \text{ V}$
Collector to emitter saturation voltage	$V_{CE(sat)1}$	—	1.4	1.7	V	$I_C = 8 \text{ A}$, $V_{GE} = 10 \text{ V}$
Collector to emitter saturation voltage	$V_{CE(sat)2}$	—	1.6	2.2	V	$I_C = 8 \text{ A}$, $V_{GE} = 4 \text{ V}$
Gate to emitter cutoff voltage	$V_{GE(off)}$	1.3	—	2.2	V	$I_C = 1 \text{ mA}$, $V_{CE} = 10 \text{ V}$
Turn-on delay time	$t_{d(on)}$	—	0.2	—	μs	$V_{CE} = 300 \text{ V}$, $R_L = 50 \Omega$, $V_{GE} = 5 \text{ V}$, $R_G = 200 \Omega$
Rise time	t_r	—	0.4	—	μs	
Turn-off delay time	$t_{d(off)}$	—	1.0	—	μs	
Fall time	t_f	—	5	—	μs	
Input capacitance	C_{iss}	—	1110	—	pF	$V_{CE} = 10 \text{ V}$, $V_{GE} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	75	—	pF	
Reveres transfer capacitance	C_{res}	—	18	—	pF	
Secondary breakdown energy	E_s/b	230	—	—	mJ	$L = 5 \text{ mH}$

Main Characteristics

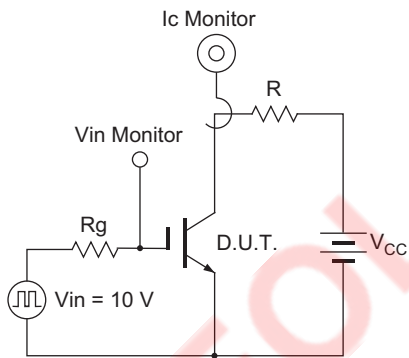




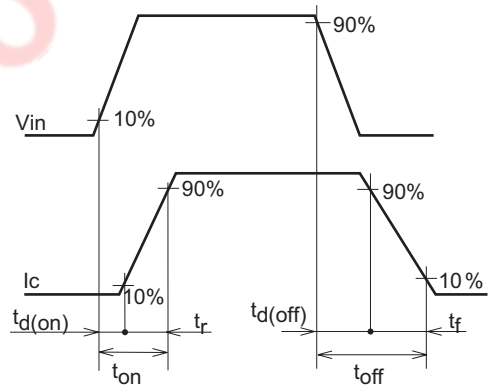
Normalized Transient Thermal Impedance vs. Pulse Width



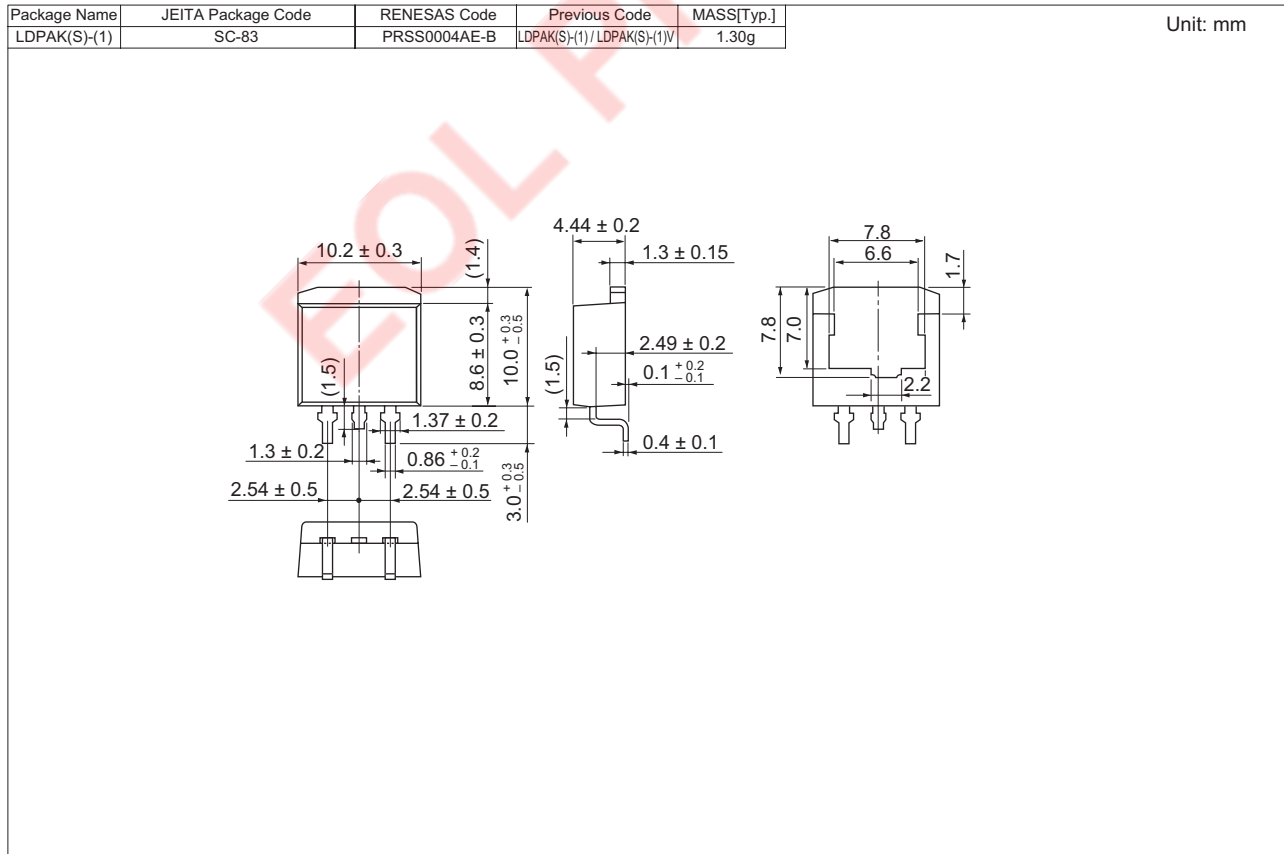
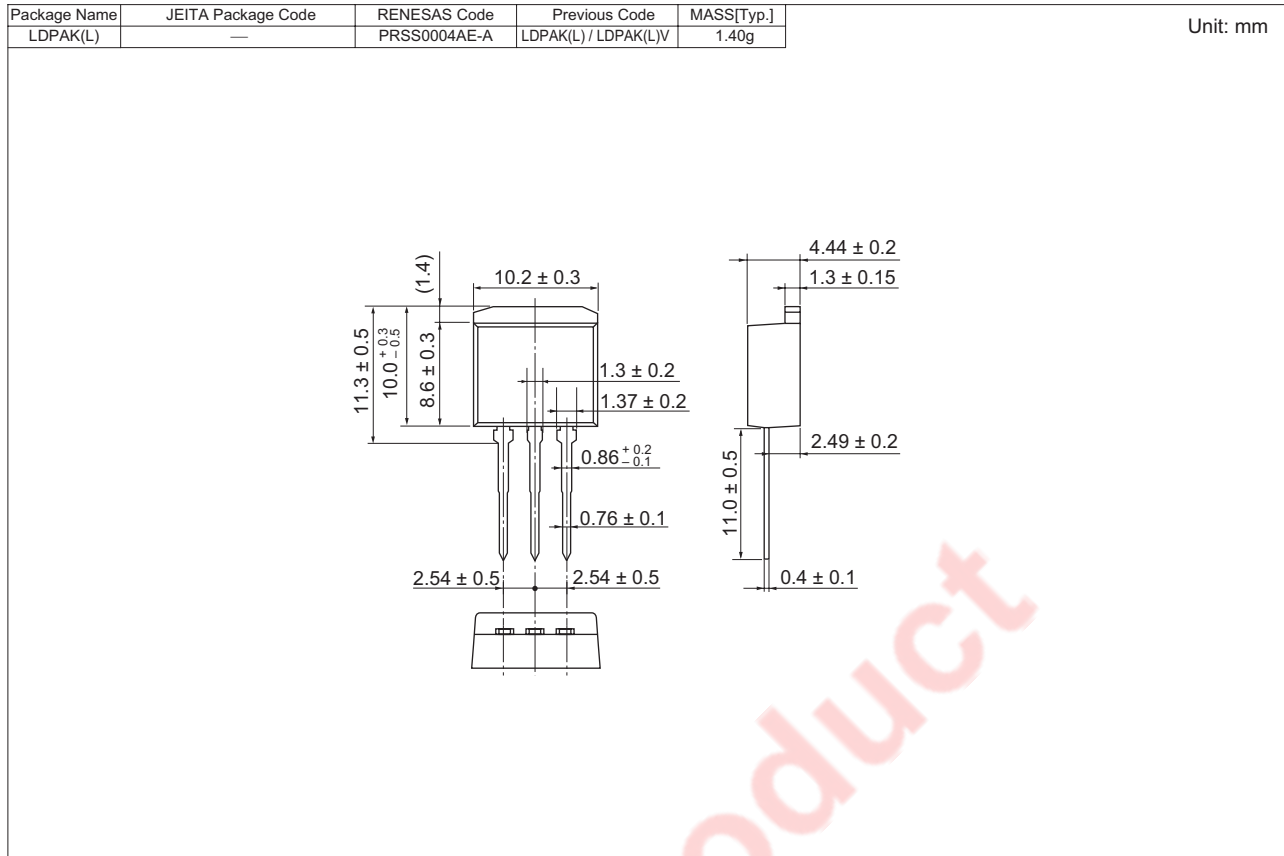
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
GN4014ZB4LD	50 pcs.	Sack
GN4014ZB4LS	1000 pcs.	Taping
GN4014ZB4LM	1000 pcs.	Taping

EOL Product

Notes:

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