

2SK2684(L), 2SK2684(S)

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1022-0200
(Previous: ADE-208-542)
Rev.2.00
Sep 07, 2005

Application

High speed power switching

Features

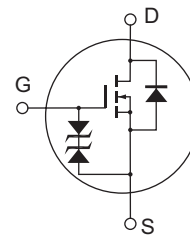
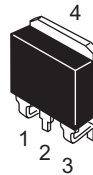
- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, DC-DC converter

Outline

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



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



1. Gate
2. Drain
3. Source
4. Drain

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	30	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	30	A
Drain peak current	$I_{D(pulse)}^{*1}$	120	A
Body to drain diode reverse drain current	I_{DR}	30	A
Channel dissipation	P_{ch}^{*2}	50	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

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

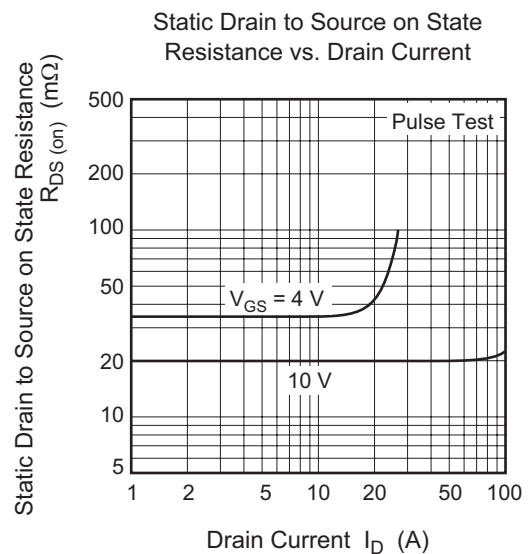
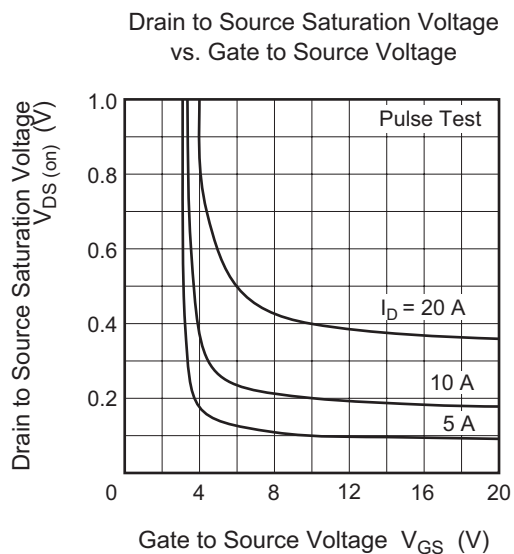
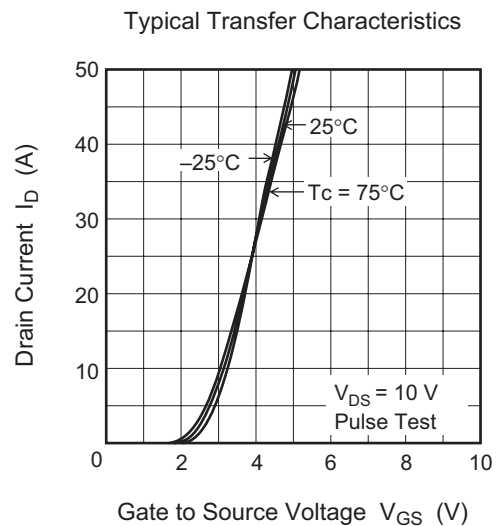
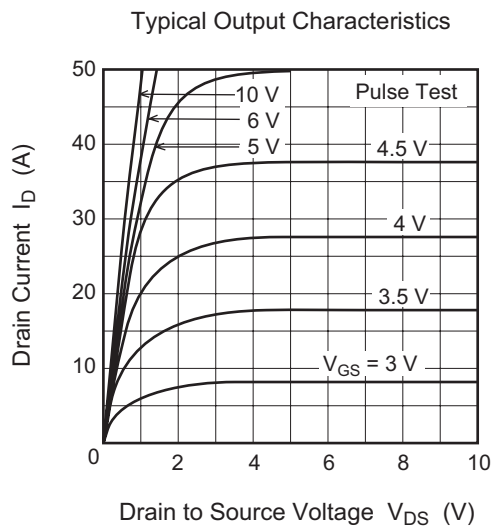
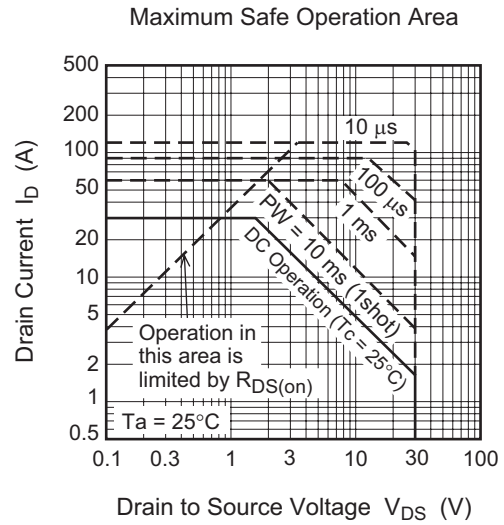
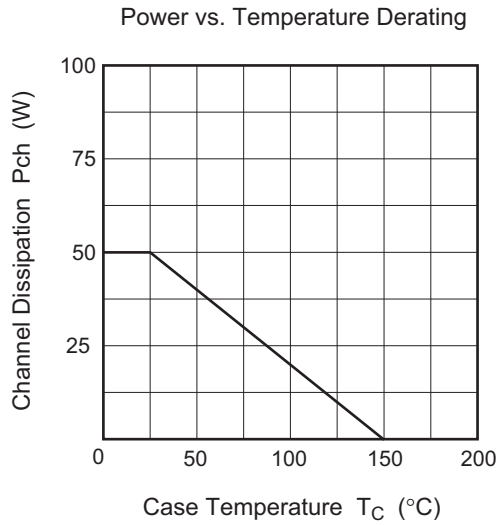
Electrical Characteristics

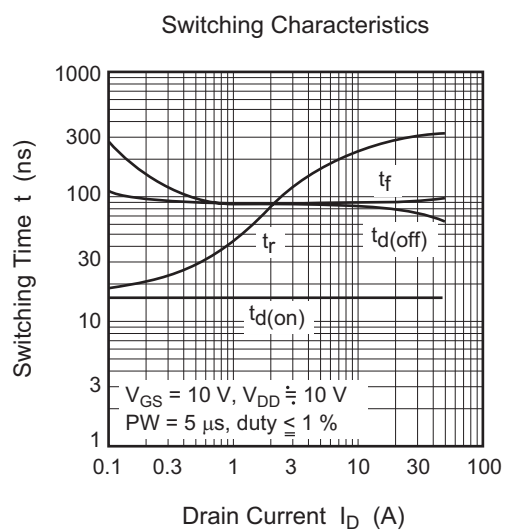
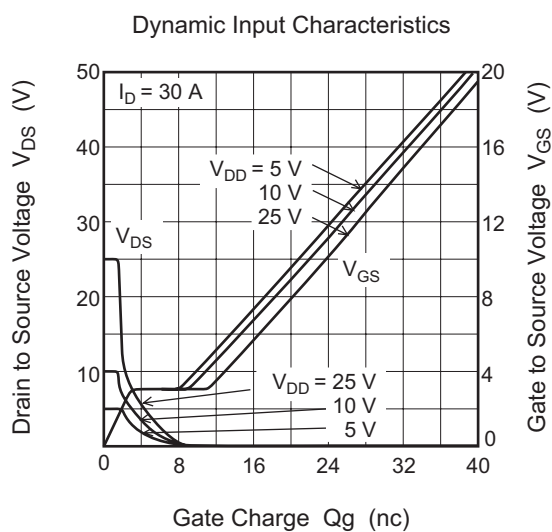
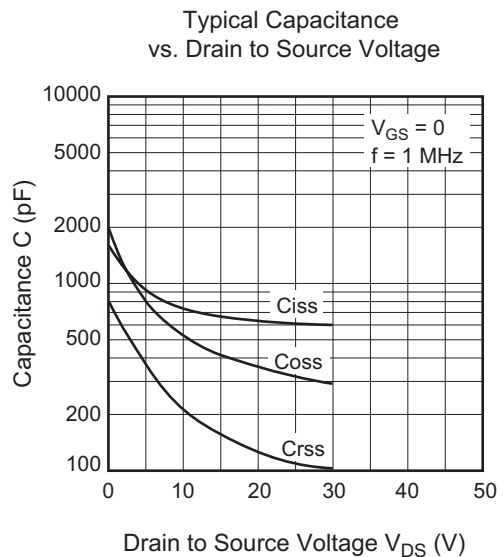
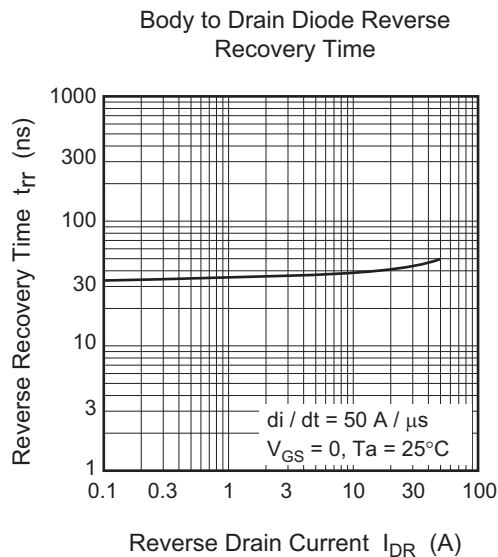
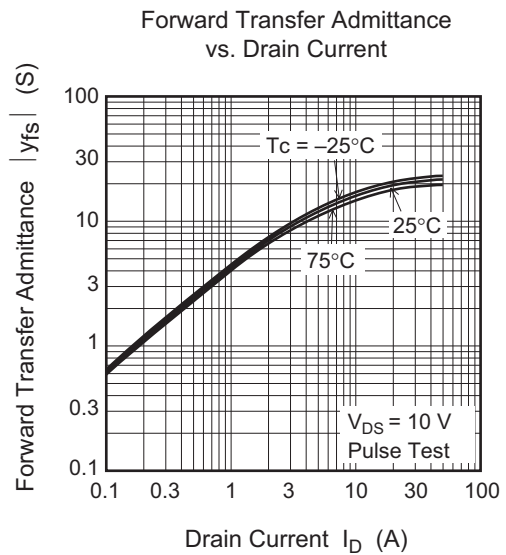
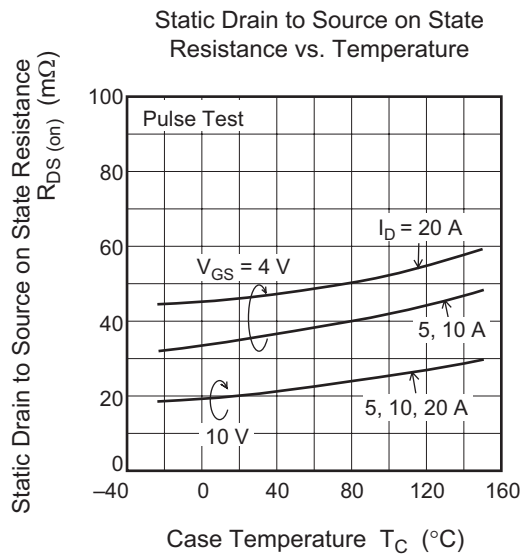
(Ta = 25°C)

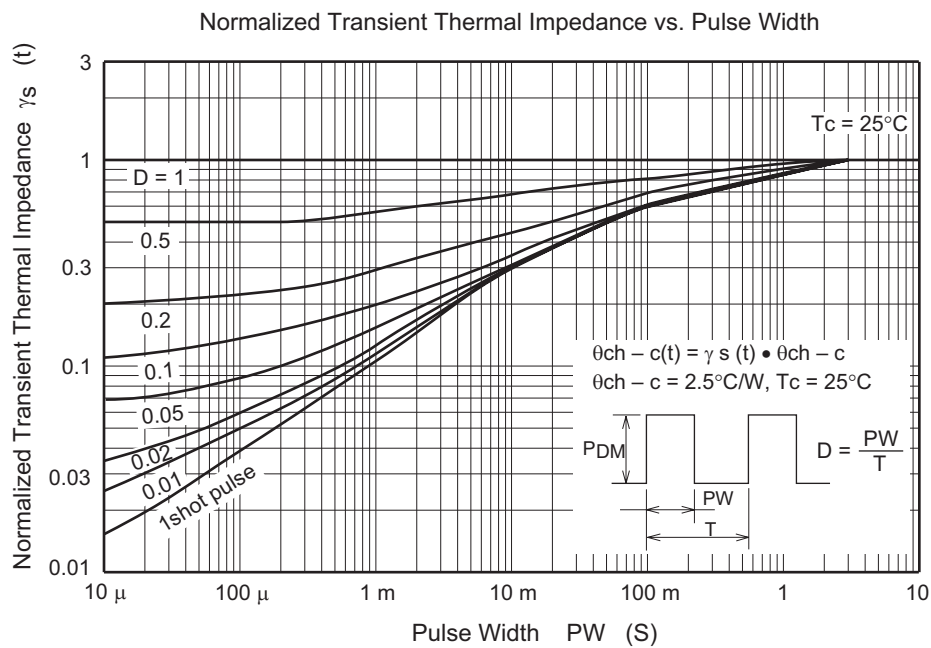
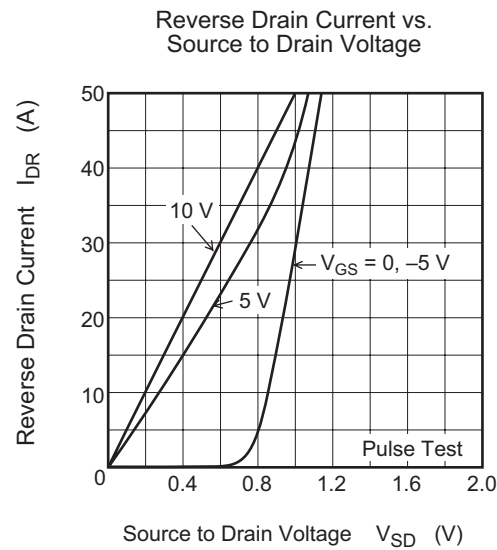
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \mu A$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 30 \text{ V}$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	20	28	$m\Omega$	$I_D = 15 \text{ A}$, $V_{GS} = 10 \text{ V}^{*3}$
	$R_{DS(on)}$	—	35	50	$m\Omega$	$I_D = 15 \text{ A}$, $V_{GS} = 4 \text{ V}^{*3}$
Forward transfer admittance	$ y_{fs} $	12	18	—	S	$I_D = 15 \text{ A}$, $V_{DS} = 10 \text{ V}^{*3}$
Input capacitance	C_{iss}	—	750	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	520	—	pF	
Reverse transfer capacitance	C_{rss}	—	210	—	pF	
Turn-on delay time	$t_{d(on)}$	—	16	—	ns	$V_{GS} = 10 \text{ V}$, $I_D = 15 \text{ A}$, $R_L = 0.67 \Omega$
Rise time	t_r	—	260	—	ns	
Turn-off delay time	$t_{d(off)}$	—	85	—	ns	
Fall time	t_f	—	90	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.0	—	V	$I_F = 30 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	45	—	ns	$I_F = 30 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 50 \text{ A}/\mu s$

Note: 3. Pulse test

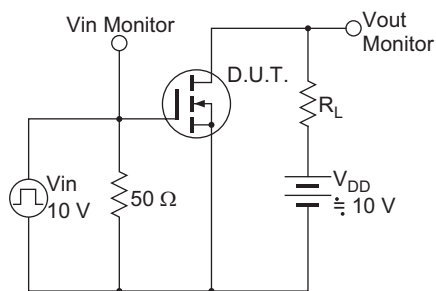
Main Characteristics



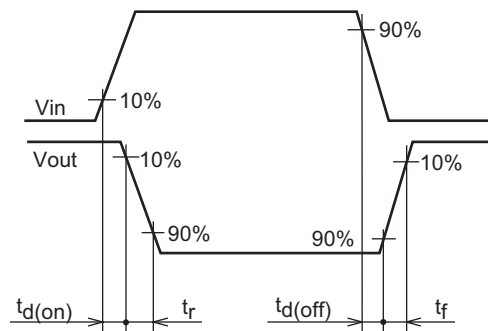




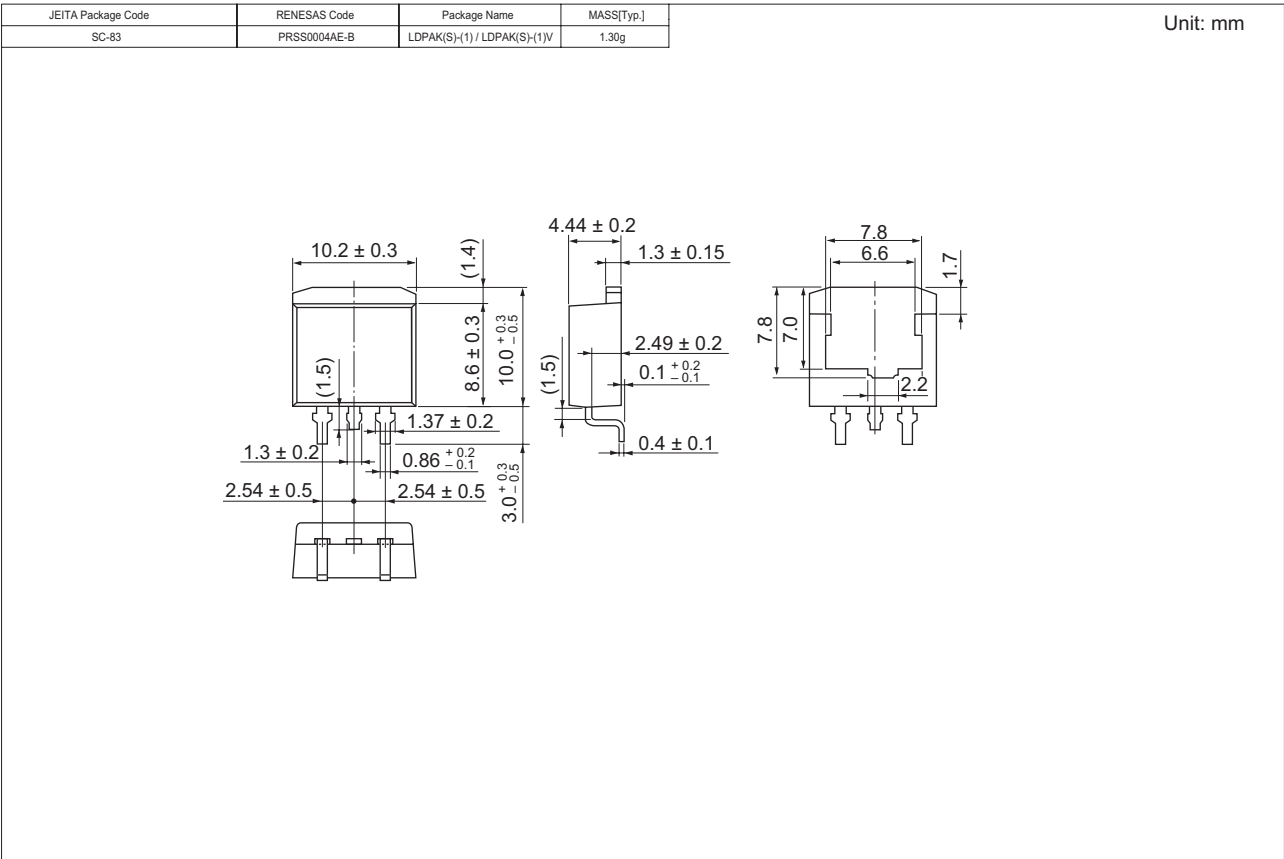
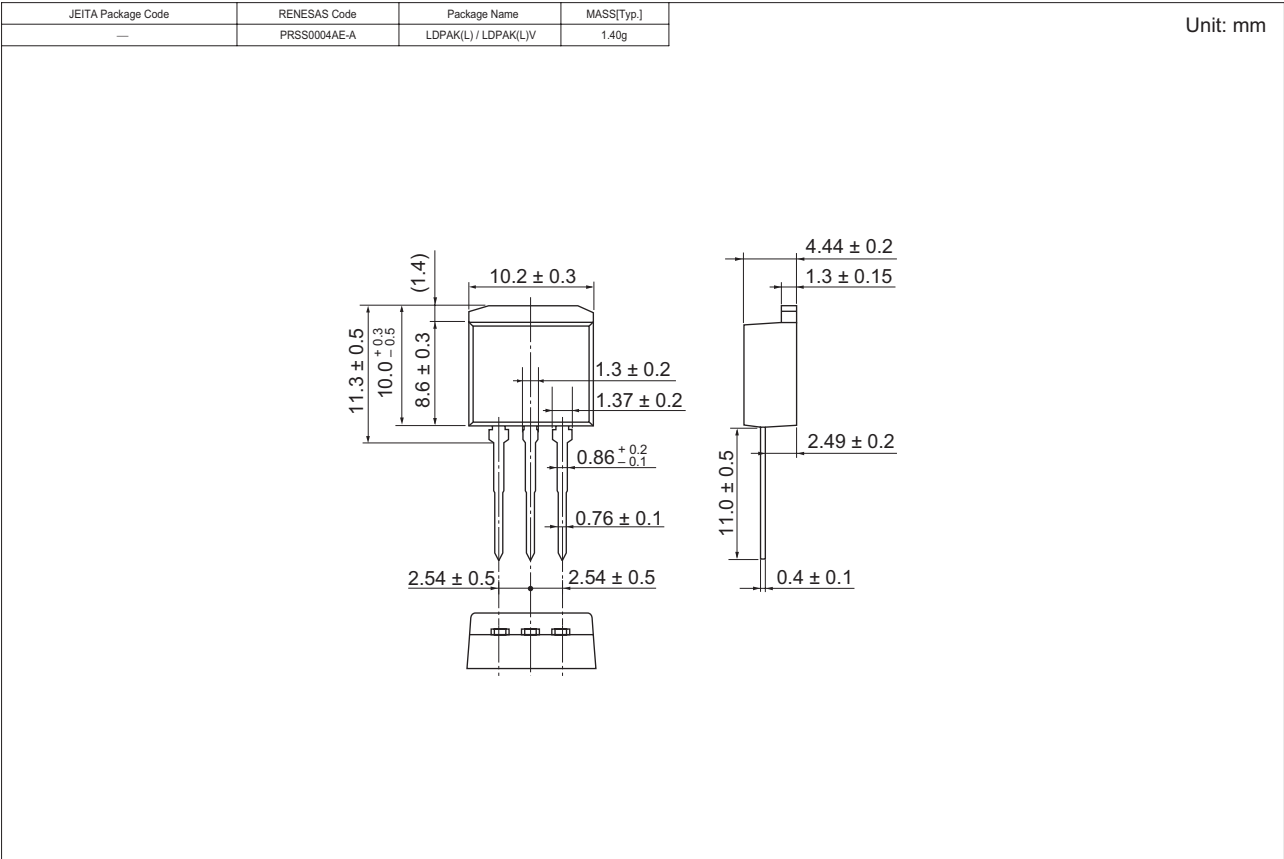
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK2684L-E	500 pcs	Box (Sack)
2SK2684STL-E	1000 pcs	Taping

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Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

Renesas Technology Europe Limited

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Renesas Technology Taiwan Co., Ltd.

10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology (Shanghai) Co., Ltd.

Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China
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Renesas Technology Singapore Pte. Ltd.

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Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

Renesas Technology Malaysia Sdn. Bhd.

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: <603> 7955-9390, Fax: <603> 7955-9510