

2SK3274 (L), 2SK3274 (S)

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1098-0300

Rev.3.00

May 15, 2006

Features

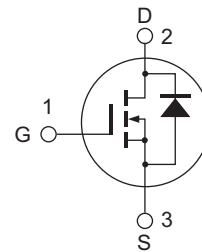
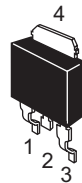
- Low on-resistance
- $R_{DS(on)} = 10\text{ m}\Omega$ typ.
- 4.5 V gate drive device
- High speed switching

Outline

RENESAS Package code: PRSS0004ZD-B
(Package name: DPAK (L)-(2))



RENESAS Package code: PRSS0004ZD-C
(Package name: DPAK (S))



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

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	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)} ^{Note 1}	120	A
Body-drain diode reverse drain current	I _{DR}	30	A
Avalanche current	I _{AP} ^{Note 3}	20	A
Avalanche energy	E _{AR} ^{Note 3}	40	mJ
Channel dissipation	P _{ch} ^{Note 2}	30	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°C3. Value at T_{ch} = 25°C, R_g ≥ 50 Ω

Electrical Characteristics

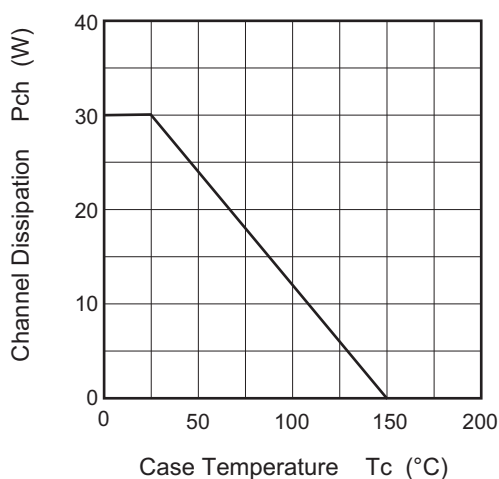
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR) DSS}	30	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±20 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 30 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS (off)}	1.5	—	3.0	V	V _{DS} = 10 V, I _D = 1 mA ^{Note 4}
Forward transfer admittance	y _{fs}	18	30	—	S	I _D = 15 A, V _{DS} = 10 V ^{Note 4}
Static drain to source on state resistance	R _{DS (on)}	—	10	13	mΩ	I _D = 15 A, V _{GS} = 10 V ^{Note 4}
	R _{DS (on)}	—	20	30	mΩ	I _D = 15 A, V _{GS} = 4.5 V ^{Note 4}
Input capacitance	C _{iss}	—	1500	—	pF	V _{DS} = 10 V V _{GS} = 0 f = 1 MHz
Output capacitance	C _{oss}	—	500	—	pF	
Reverse transfer capacitance	C _{rss}	—	250	—	pF	
Total gate charge	Q _g	—	27	—	nC	V _{DD} = 10 V V _{GS} = 10 V I _D = 30 A
Gate to source charge	Q _{gs}	—	6	—	nC	
Gate to drain charge	Q _{gd}	—	5	—	nC	
Turn-on delay time	t _{d (on)}	—	22	—	ns	V _{GS} = 10 V I _D = 15 A R _L = 2 Ω
Rise time	t _r	—	170	—	ns	
Turn-off delay time	t _{d (off)}	—	110	—	ns	
Fall time	t _f	—	145	—	ns	
Body-drain diode forward voltage	V _{DF}	—	1.0	—	V	I _F = 30 A, V _{GS} = 0
Body-drain diode reverse recovery time	t _{rr}	—	35	—	ns	I _F = 30 A, V _{GS} = 0 di _F /dt = 50 A/μs

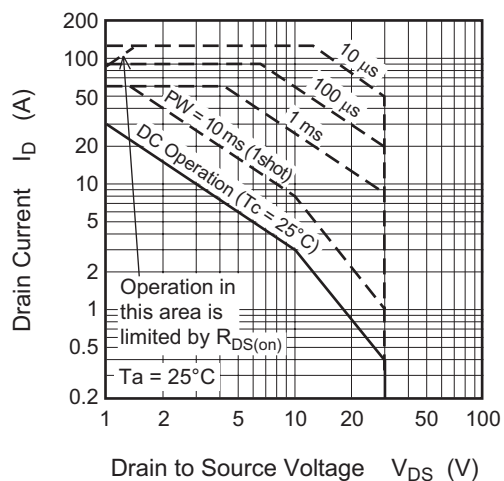
Note: 4. Pulse test

Main Characteristics

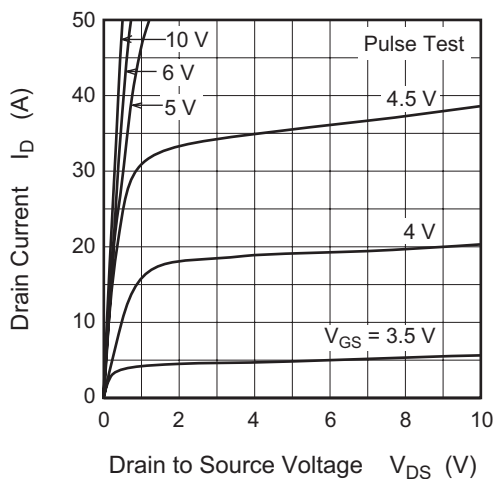
Power vs. Temperature Derating



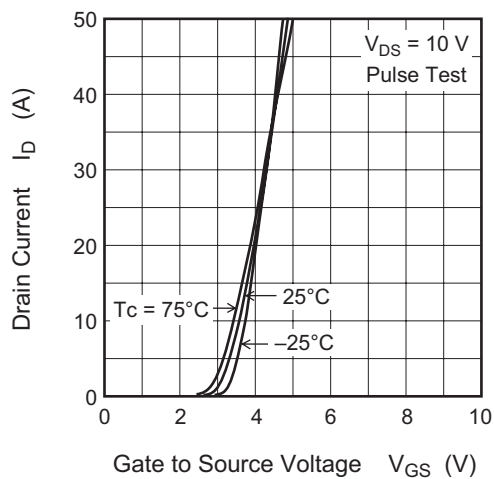
Maximum Safe Operation Area



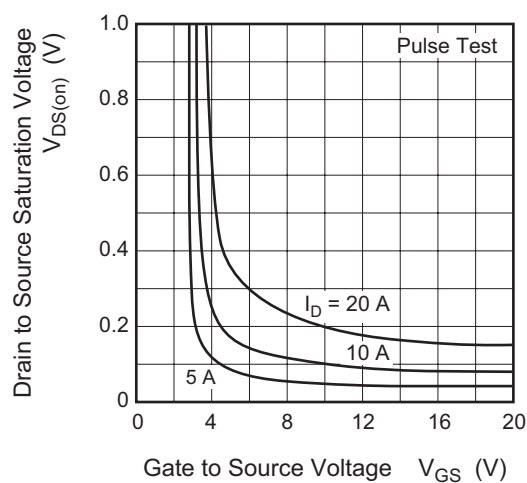
Typical Output Characteristics



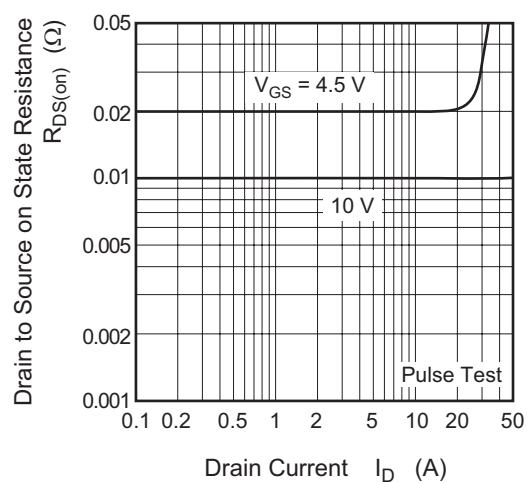
Typical Transfer Characteristics

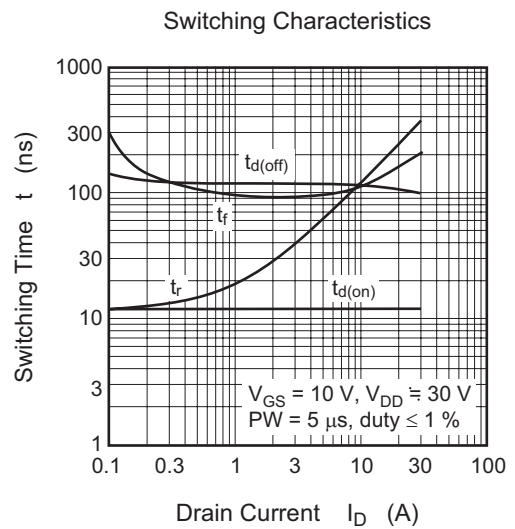
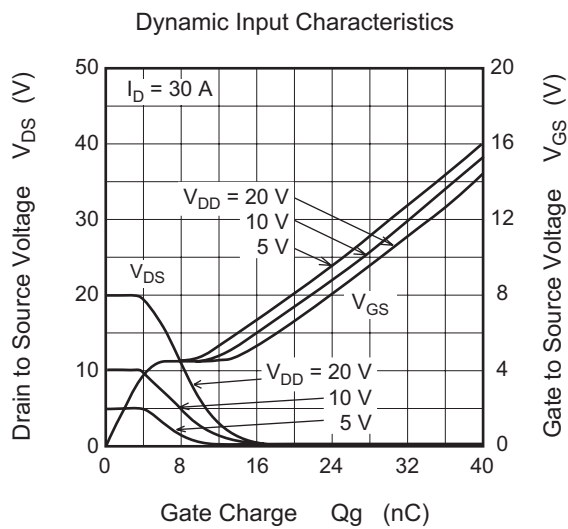
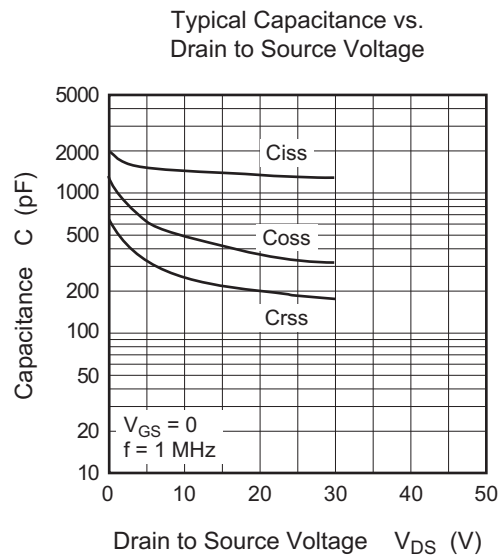
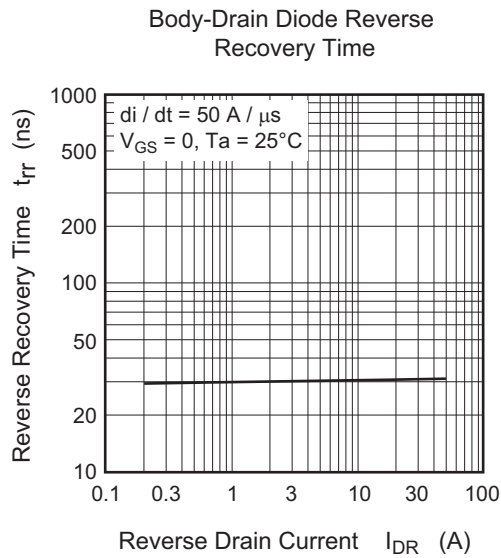
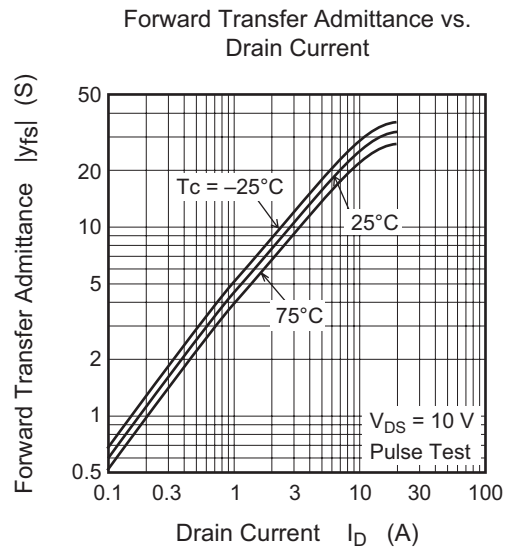
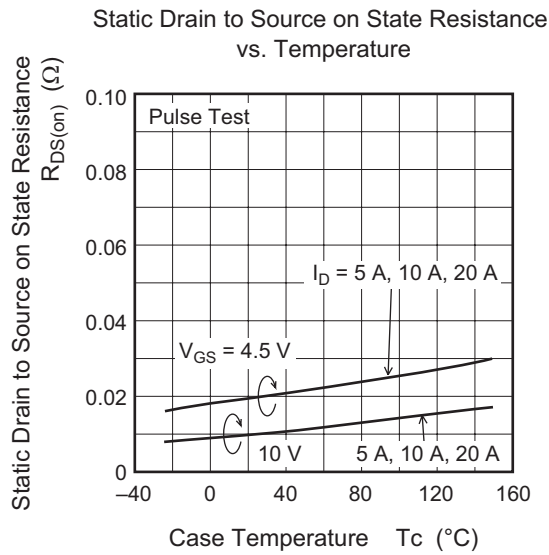


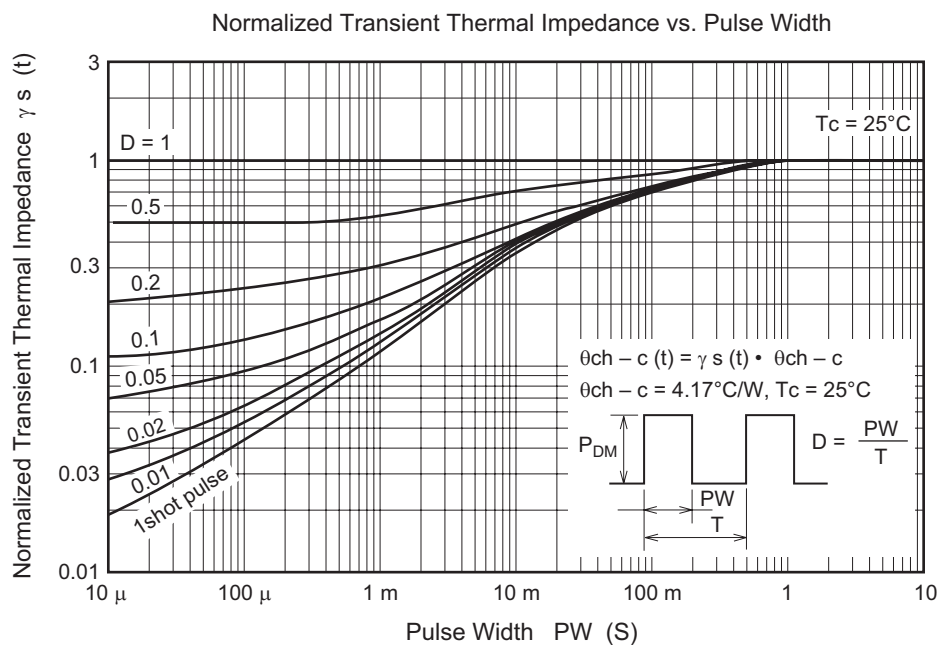
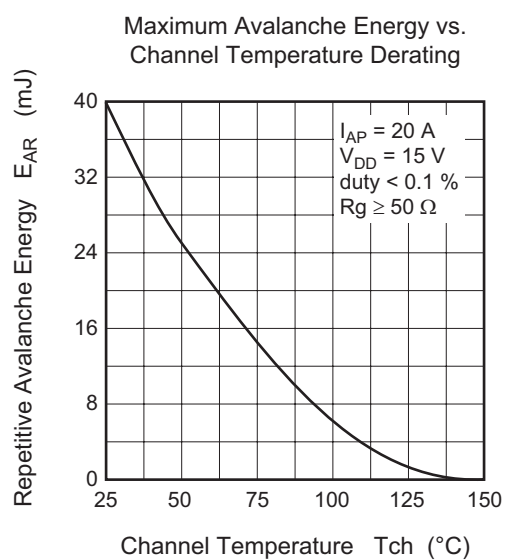
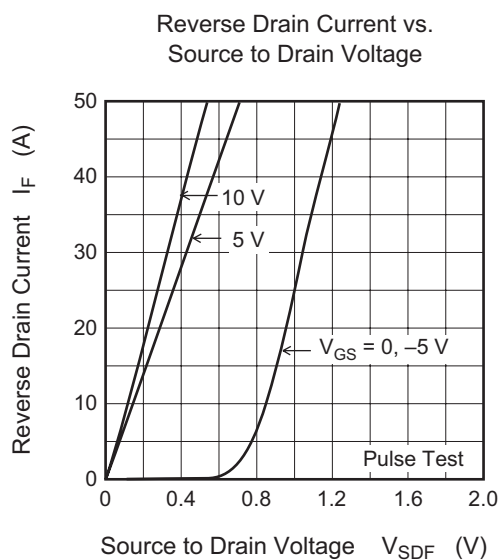
Drain to Source Saturation Voltage vs. Gate to Source Voltage



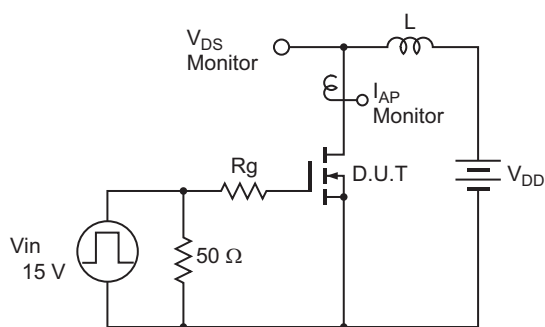
Static Drain to Source on State Resistance vs. Drain Current





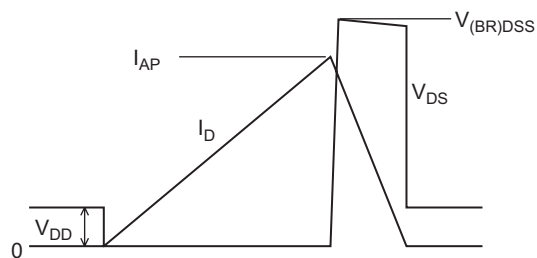


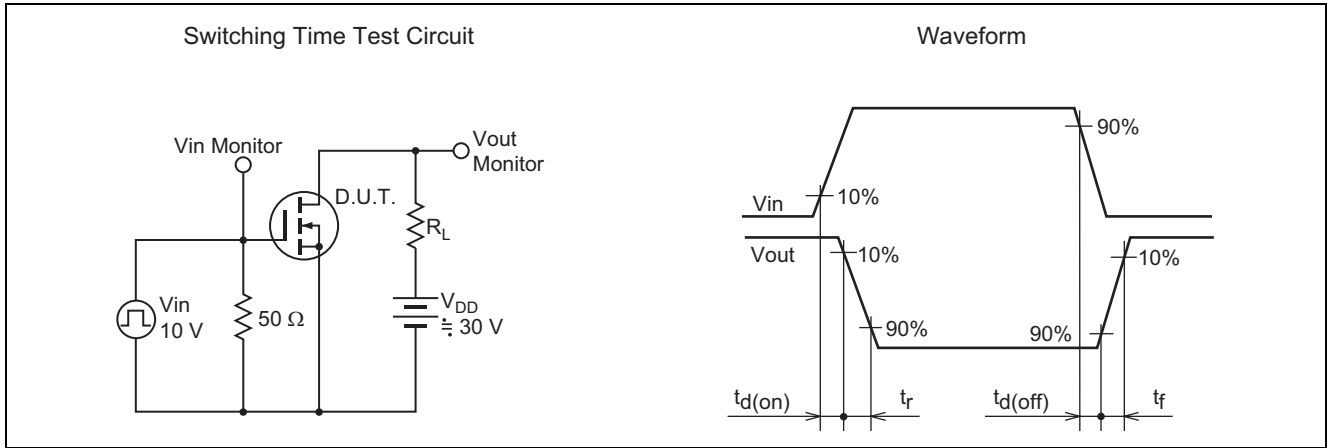
Avalanche Test Circuit



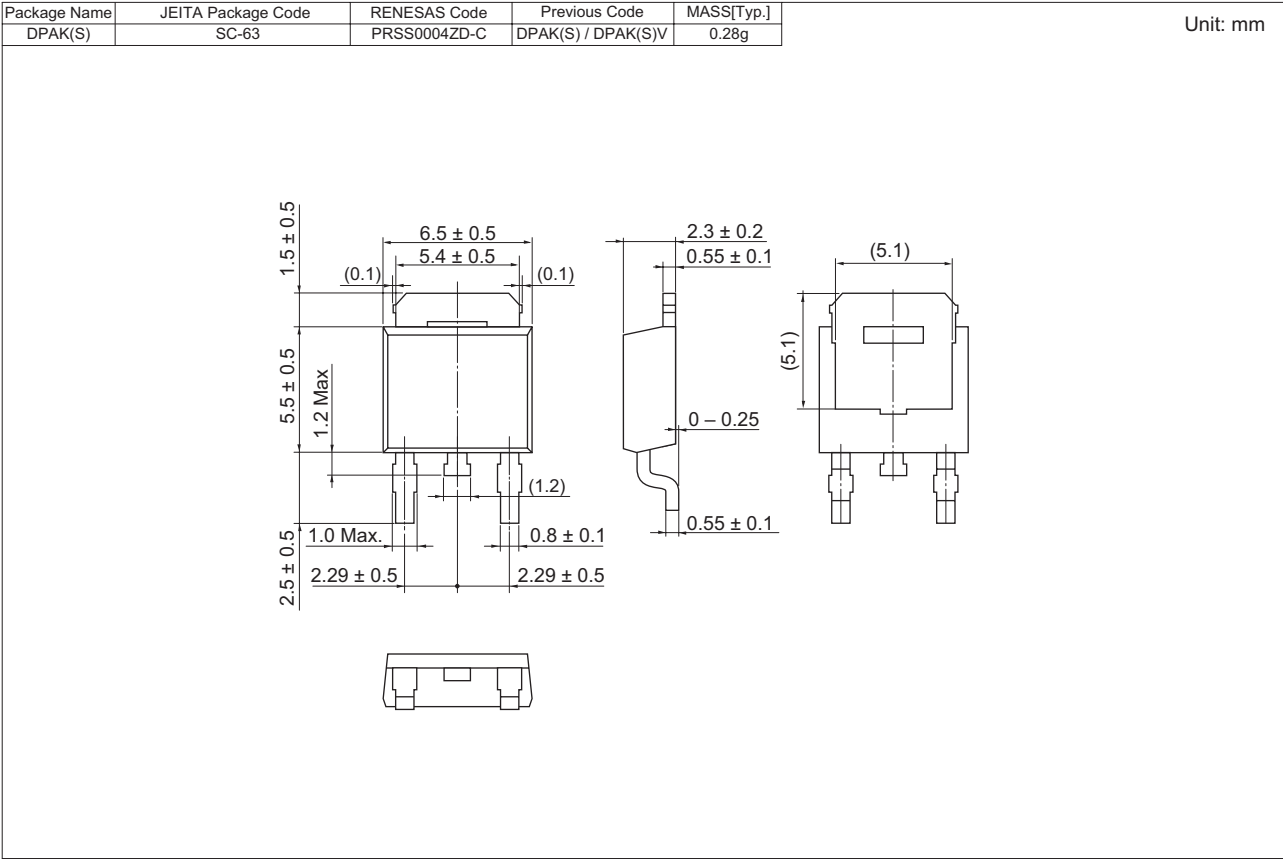
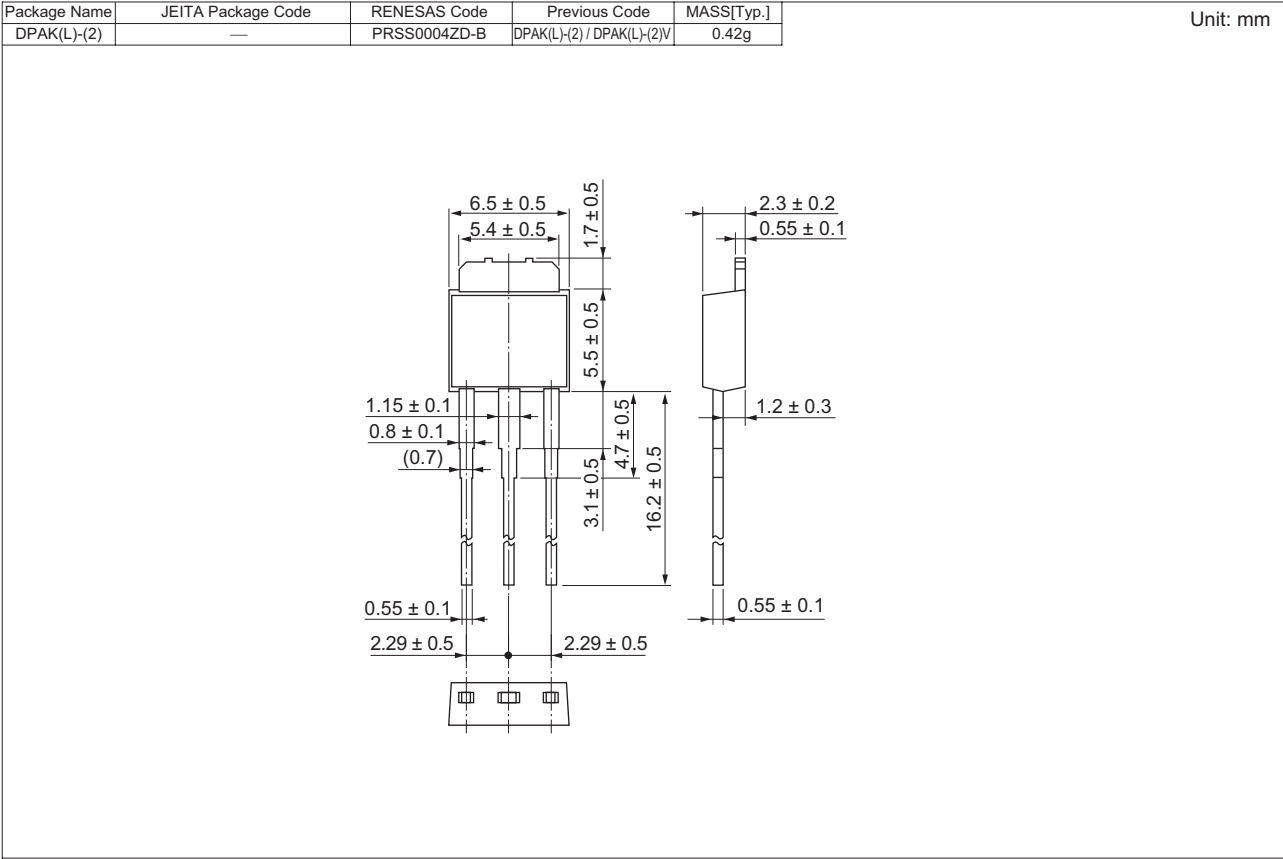
Avalanche Waveform

$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$





Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK3274L-E	3200 pcs	Box (Sack)
2SK3274STL-E	3000 pcs	Taping

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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