

HAT2129H

Silicon N Channel Power MOS FET Power Switching

REJ03G0049-0500

Rev.5.00

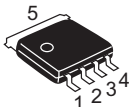
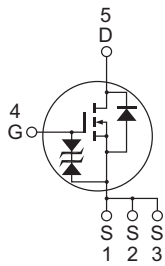
Sep 20, 2005

Features

- Capable of 7 V gate drive
- Low drive current
- High density mounting
- Low on-resistance
 $R_{DS(on)} = 6 \text{ m}\Omega$ typ. (at $V_{GS} = 10 \text{ V}$)

Outline

RENESAS Package code: PTZZ0005DA-A)
(Package name: LFPAK)

1, 2, 3 Source
4 Gate
5 Drain

Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	40	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	30	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	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}	32	mJ
Channel dissipation	P_{ch} ^{Note2}	20	W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

- Notes: 1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$
 2. $T_c = 25^\circ\text{C}$
 3. Value at $T_{ch} = 25^\circ\text{C}$, $R_g \geq 50 \Omega$

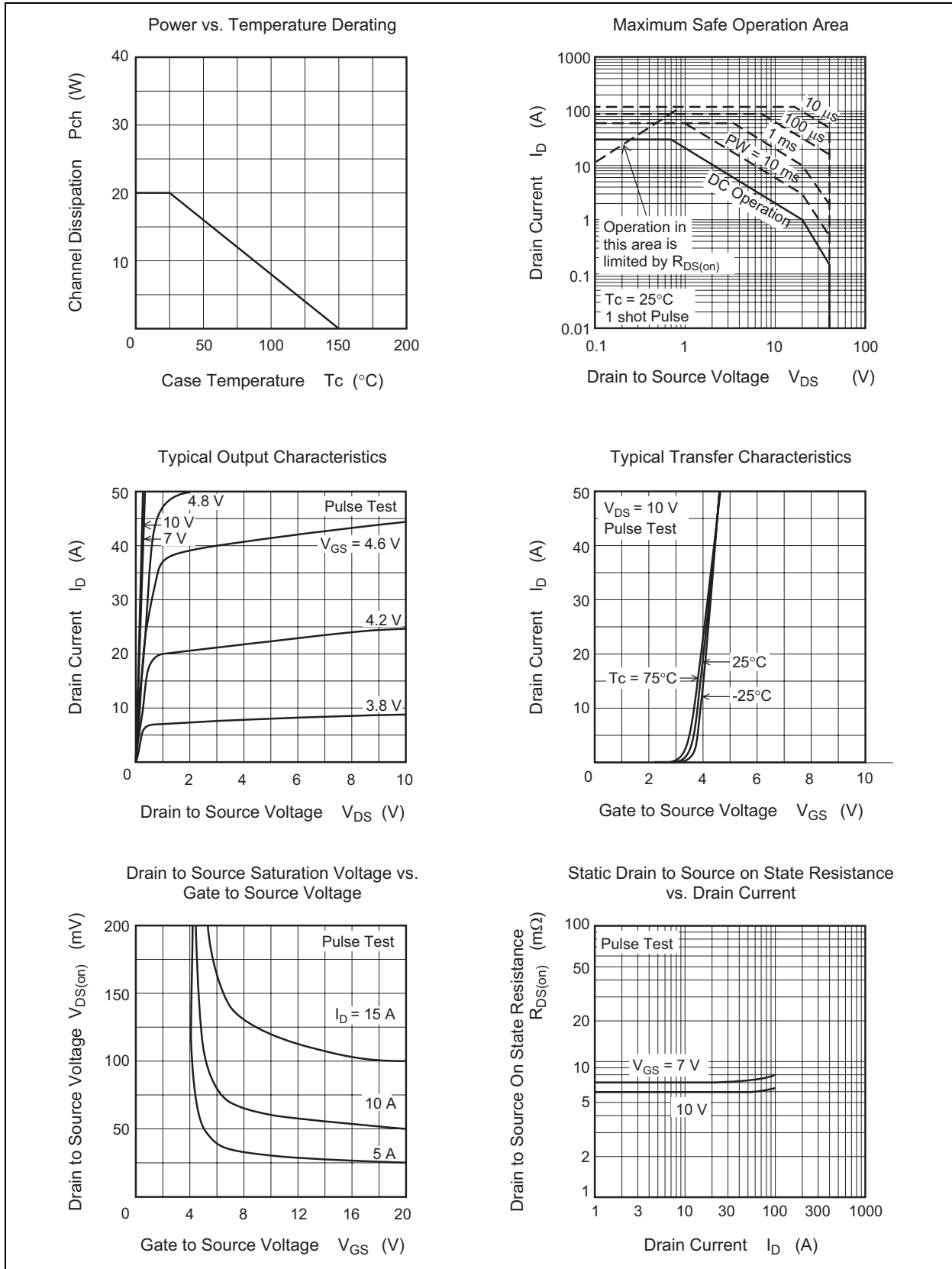
Electrical Characteristics

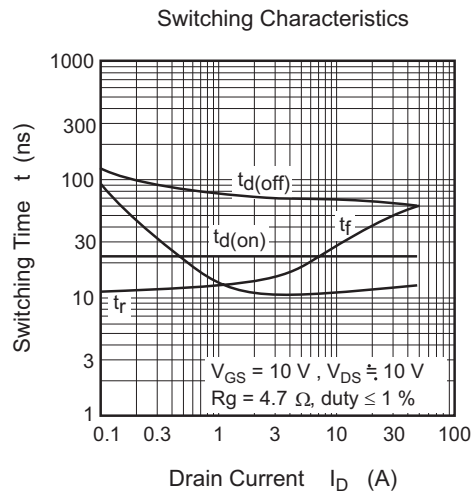
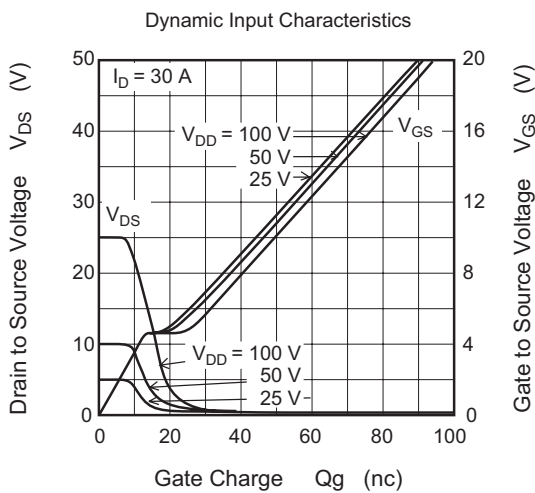
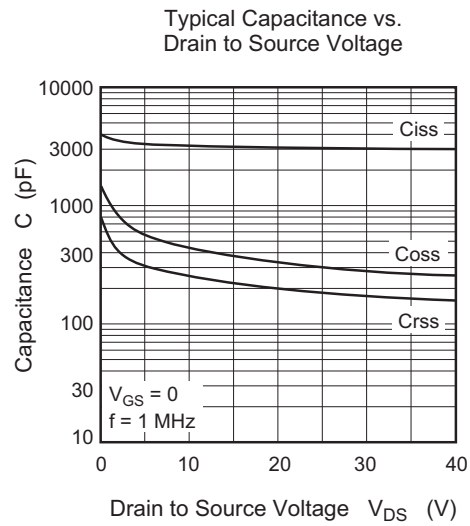
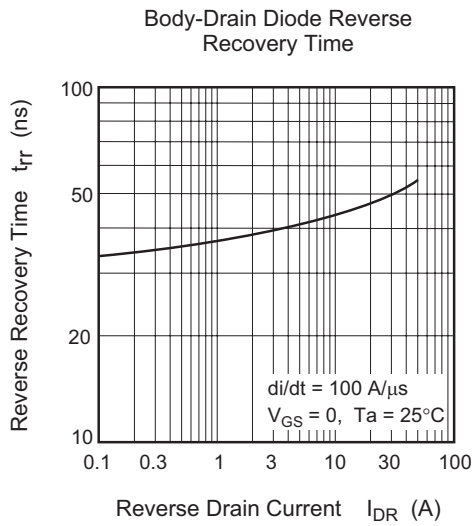
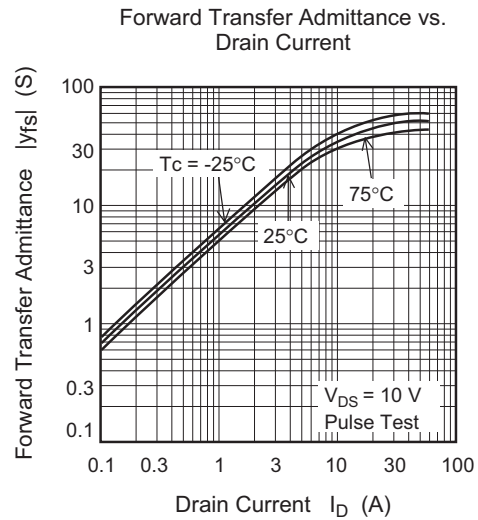
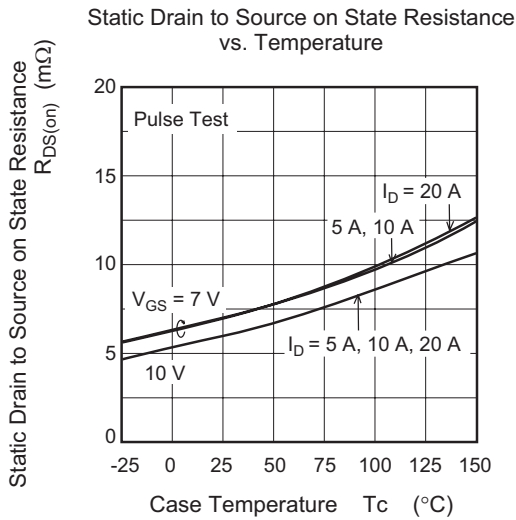
(T_a = 25°C)

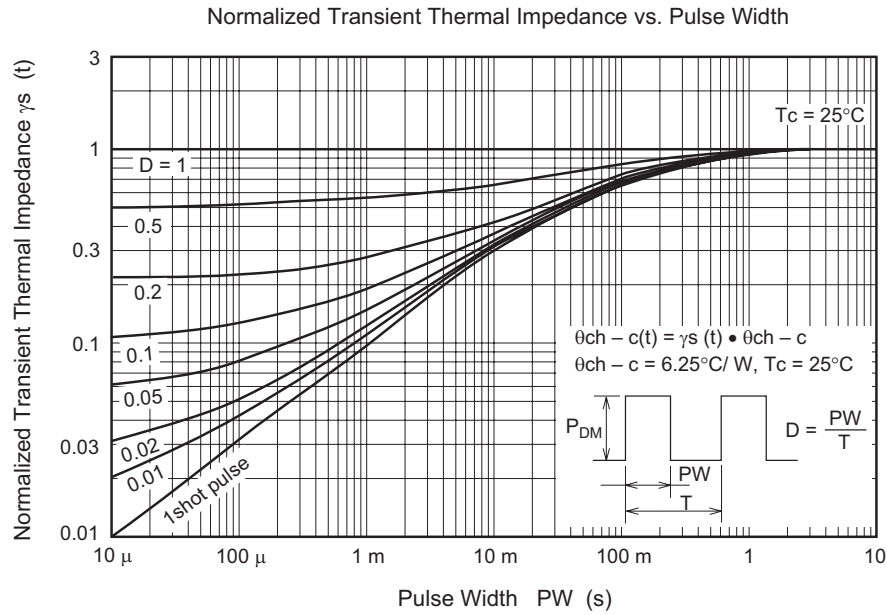
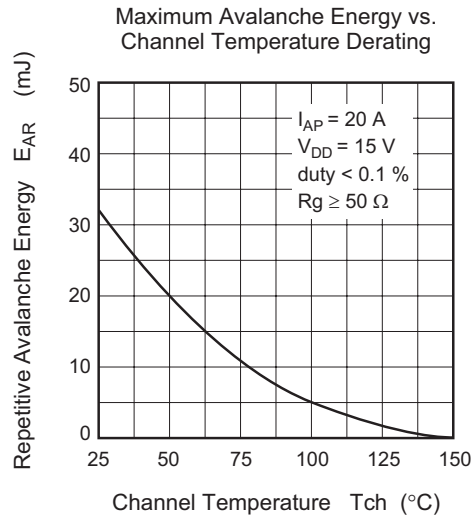
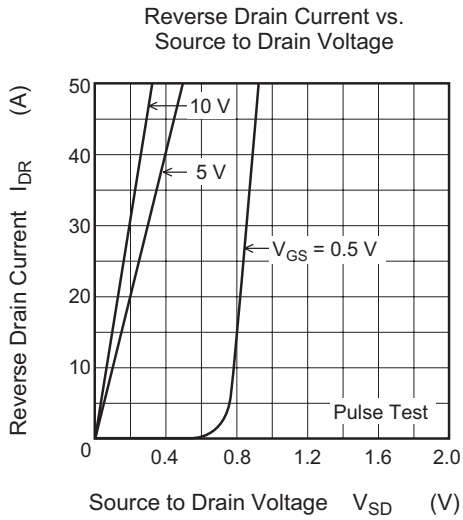
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	40	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR)GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±16 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	1	μA	V _{DS} = 40 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	2.0	—	3.5	V	V _{DS} = 10 V, I _D = 1 mA
Static drain to source on state resistance	R _{DS(on)}	—	6.0	7.5	mΩ	I _D = 15 A, V _{GS} = 10 V ^{Note4}
	R _{DS(on)}	—	7.0	9.5	mΩ	I _D = 15 A, V _{GS} = 7 V ^{Note4}
Forward transfer admittance	y _{fs}	24	40	—	S	I _D = 15 A, V _{DS} = 10 V ^{Note4}
Input capacitance	C _{iss}	—	3200	—	pF	V _{DS} = 10 V, V _{GS} = 0, f = 1 MHz
Output capacitance	C _{oss}	—	450	—	pF	
Reverse transfer capacitance	C _{rss}	—	260	—	pF	
Total gate charge	Q _g	—	46	—	nC	V _{DD} = 10 V, V _{GS} = 10 V, I _D = 30 A
Gate to source charge	Q _{gs}	—	13.5	—	nC	
Gate to drain charge	Q _{gd}	—	7.5	—	nC	
Turn-on delay time	t _{d(on)}	—	22	—	ns	V _{GS} = 10 V, I _D = 15 A, V _{DD} = 10 V, R _L = 0.67 Ω, R _g = 4.7 Ω
Rise time	t _r	—	33	—	ns	
Turn-off delay time	t _{d(off)}	—	67	—	ns	
Fall time	t _f	—	11	—	ns	
Body-drain diode forward voltage	V _{DF}	—	0.84	1.10	V	I _F = 30 A, V _{GS} = 0 ^{Note4}
Body-drain diode reverse recovery time	t _{rr}	—	50	—	ns	I _F = 30 A, V _{GS} = 0 di _F /dt = 50 A/μs

Notes: 4. Pulse test

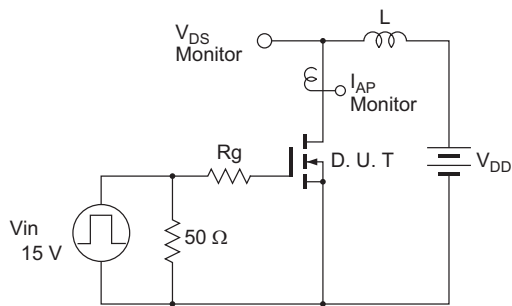
Main Characteristics





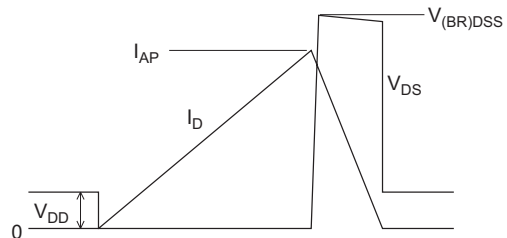


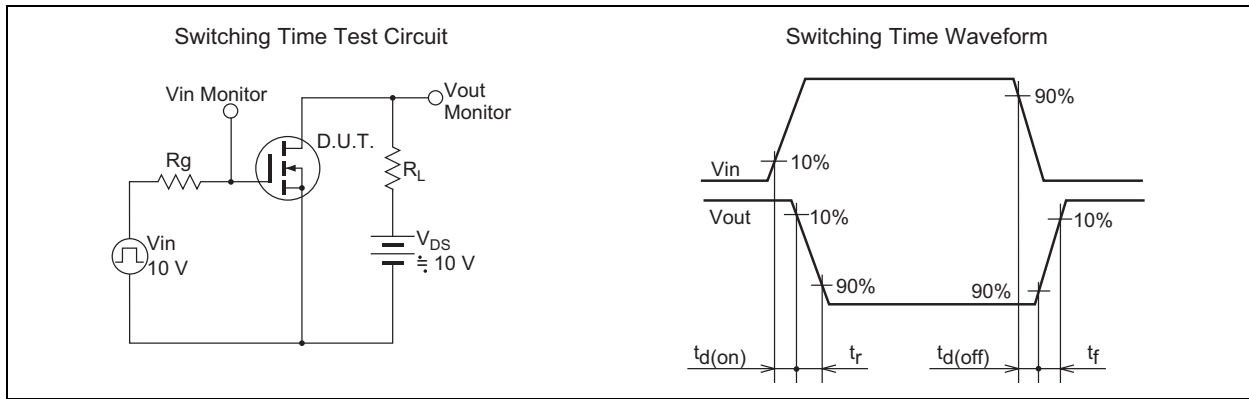
Avalanche Test Circuit



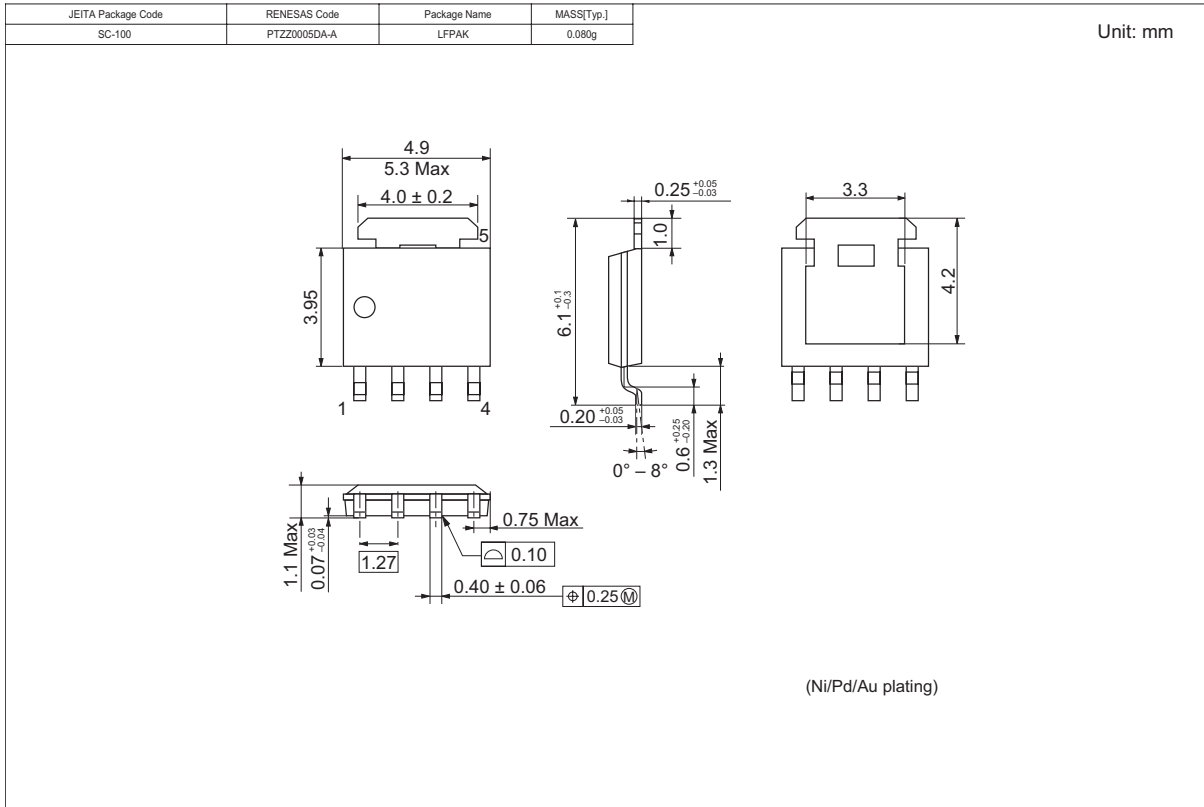
Avalanche Waveform

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





Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT2129H-EL-E	2500 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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