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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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RQK0301FGDQS

Silicon N Channel MOS FET
Power Switching

REJ03G1269-0300

Rev.3.00

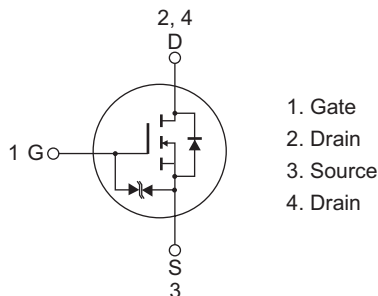
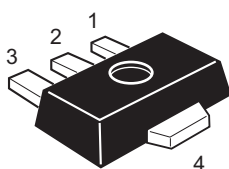
Jun 22, 2006

Features

- Low on-resistance
 $R_{DS(on)} = 28 \text{ m}\Omega$ typ ($V_{GS} = 10 \text{ V}$, $I_D = 3 \text{ A}$)
- Low drive current
- High speed switching
- 4.5 V gate drive

Outline

RENESAS package code: PLZZ0004CA-A
(Package name: UPAK®)



Note: Marking is "FG".

*UPAK is a trademark of Renesas Technology Corp.

Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	30	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	6	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	8.8	A
Body - drain diode reverse drain current	I_{DR}	6	A
Channel dissipation	P_{ch} ^{Note2}	1.5	W
Channel dissipation	$P_{ch(pulse)}$ ^{Note1}	5	W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Notes: 1. $PW \leq 1 \text{ s}$, duty cycle $\leq 1\%$

2. When using the glass epoxy board (FR-4: 40 x 40 x 1 mm)

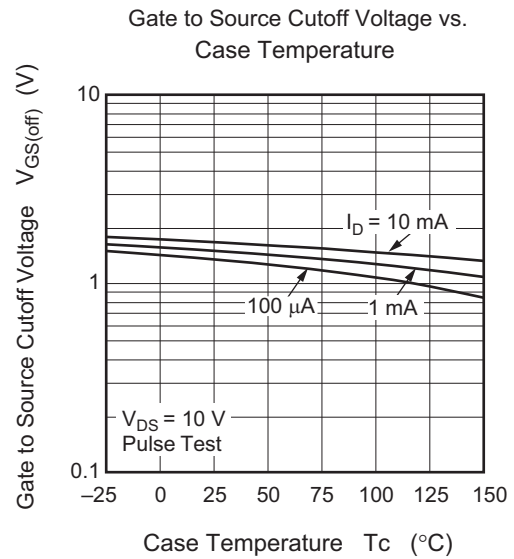
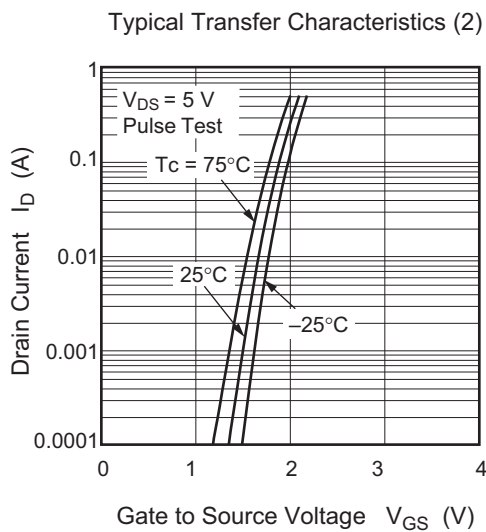
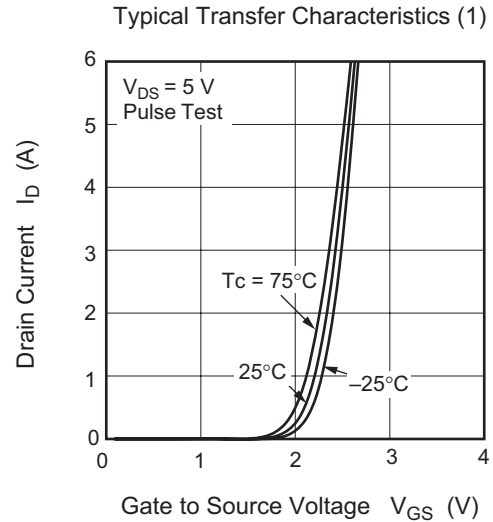
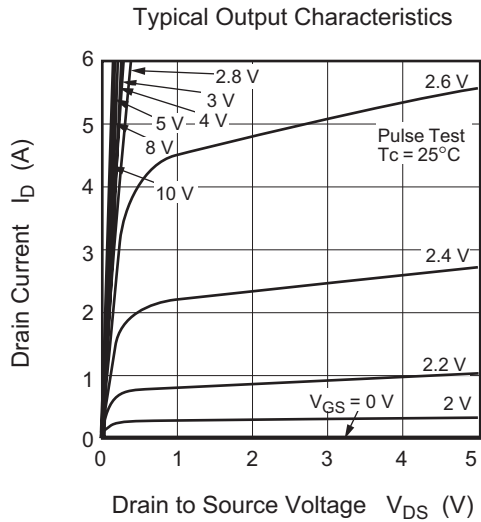
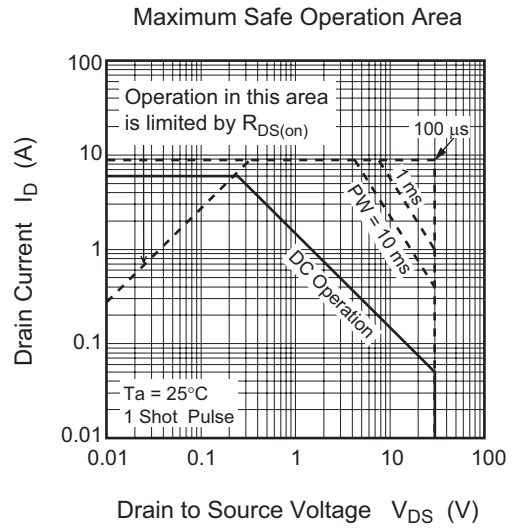
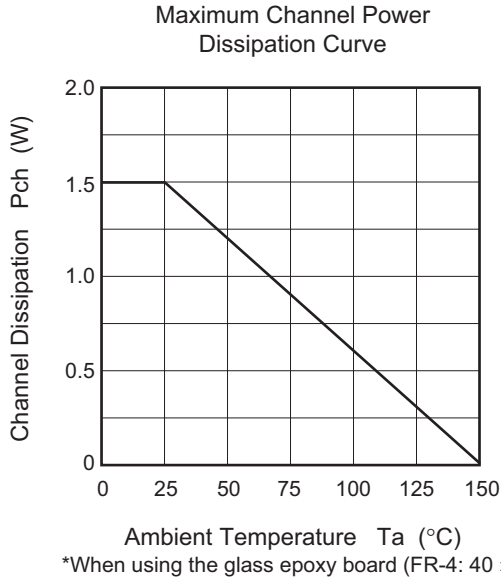
Electrical Characteristics

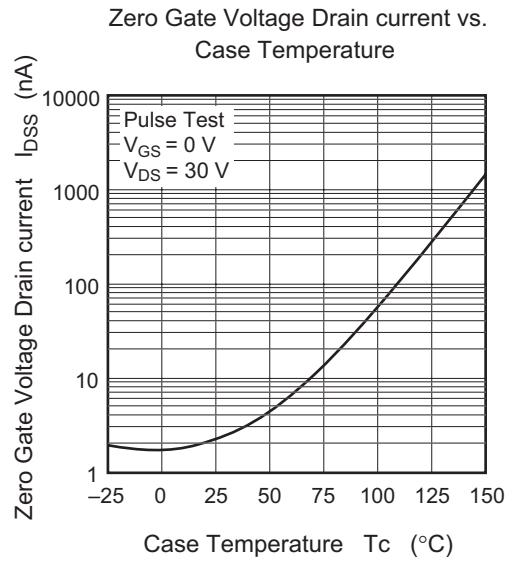
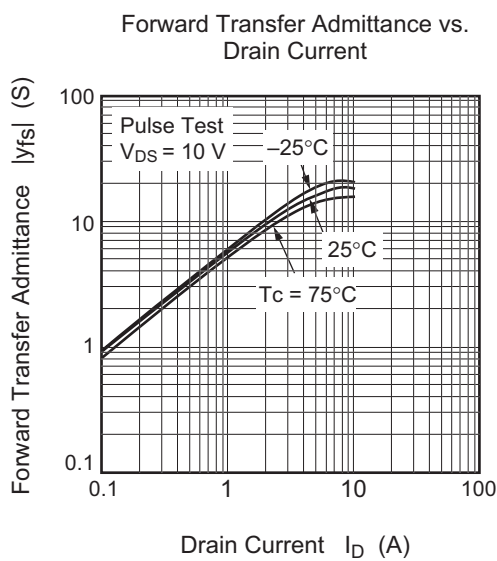
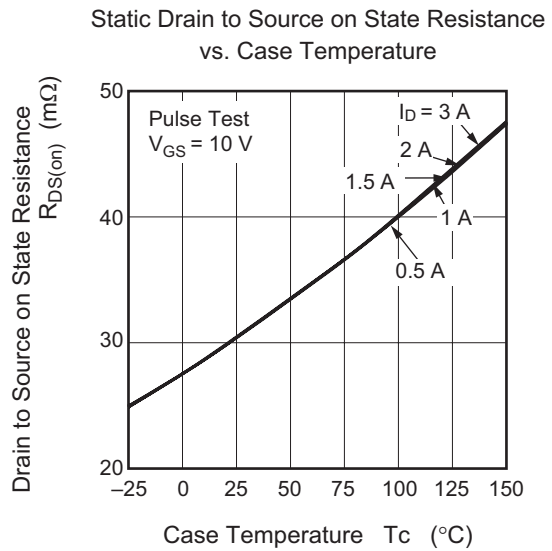
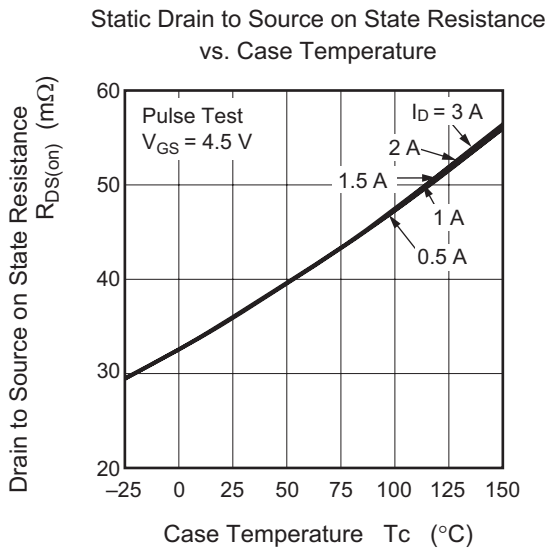
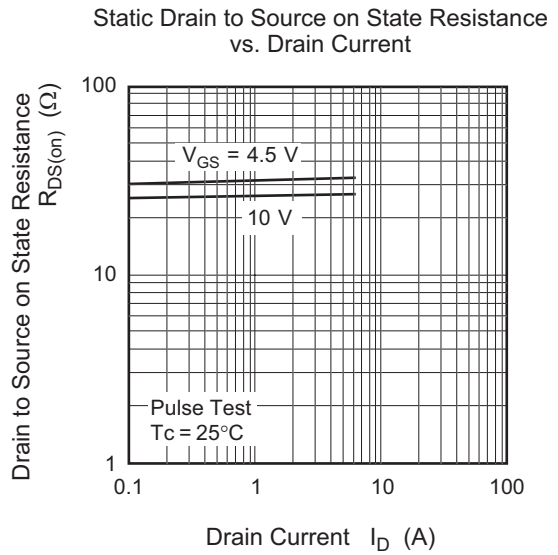
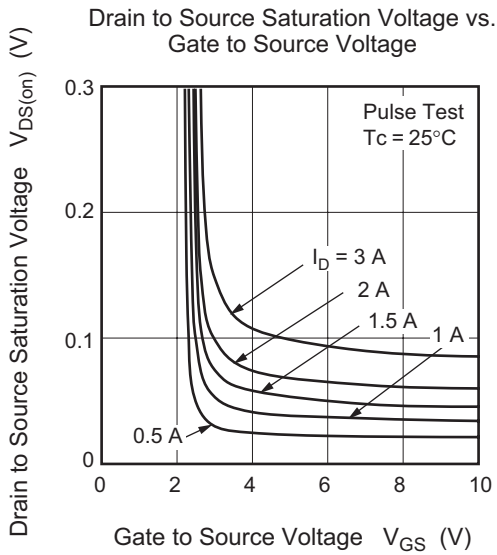
(Ta = 25°C)

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	$I_G = \pm 100 \mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Drain to source leak current	I_{DSS}	—	—	1	μA	$V_{DS} = 30 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$V_{DS} = 10 \text{ V}, I_D = 1 \text{ mA}$
Drain to source on state resistance	$R_{DS(on)}$	—	28	35	$\text{m}\Omega$	$I_D = 3 \text{ A}, V_{GS} = 10 \text{ V}^{\text{Note3}}$
	$R_{DS(on)}$	—	35	49	$\text{m}\Omega$	$I_D = 3 \text{ A}, V_{GS} = 4.5 \text{ V}^{\text{Note3}}$
Forward transfer admittance	$ y_{fs} $	6.9	11.5	—	S	$I_D = 3 \text{ A}, V_{DS} = 10 \text{ V}^{\text{Note3}}$
Input capacitance	C_{iss}	—	750	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	112	—	pF	
Reverse transfer capacitance	C_{rss}	—	61	—	pF	
Turn - on delay time	$t_{d(on)}$	—	13	—	ns	$I_D = 1 \text{ A}, V_{GS} = 10 \text{ V},$ $R_L = 10 \Omega, R_g = 4.7 \Omega$
Rise time	t_r	—	39	—	ns	
Turn - off delay time	$t_{d(off)}$	—	51	—	ns	
Fall time	t_f	—	4.0	—	ns	
Total gate charge	Q_g	—	12	—	nC	$V_{DD} = 10 \text{ V}, V_{GS} = 10 \text{ V},$ $I_D = 6 \text{ A}$
Gate to Source charge	Q_{gs}	—	1.8	—	nC	
Gate to drain charge	Q_{gd}	—	2.1	—	nC	
Body - drain diode forward voltage	V_{DF}	—	0.75	—	V	$I_F = 1.5 \text{ A}, V_{GS} = 0^{\text{Note3}}$

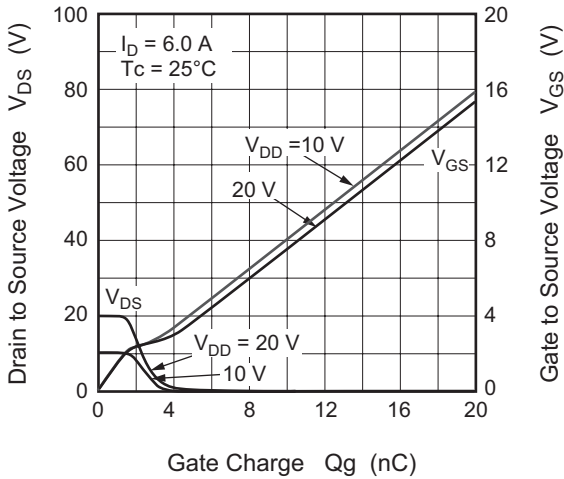
Notes: 3. Pulse test

Main Characteristics

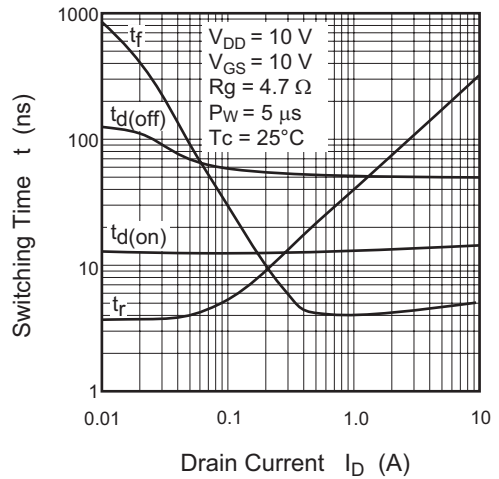




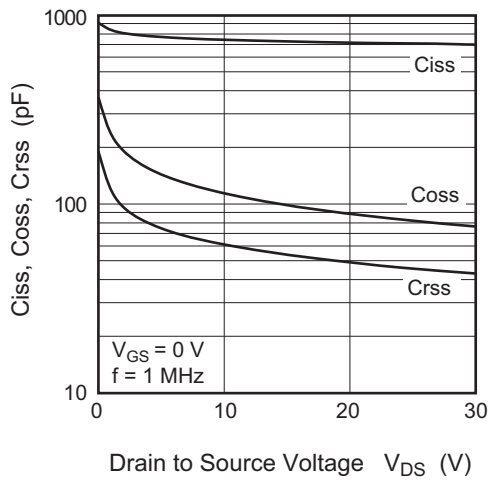
Dynamic Input Characteristics



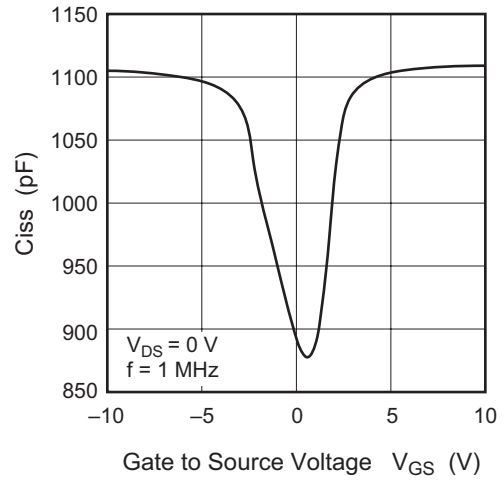
Switching Characteristics



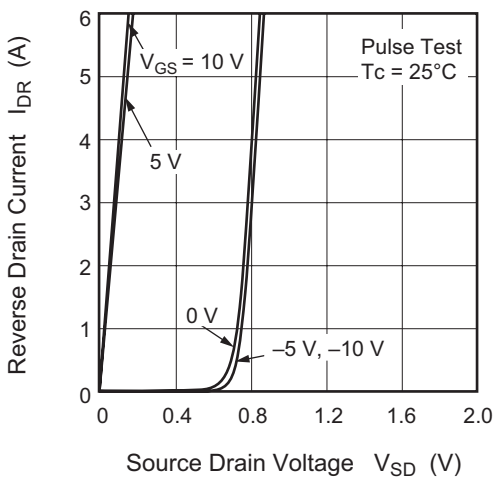
Typical Capacitance vs. Drain to Source Voltage



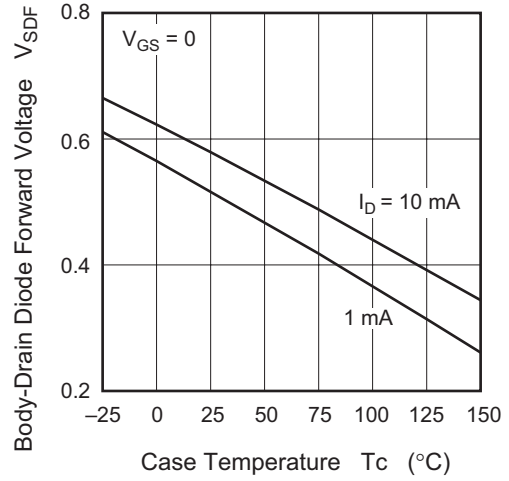
Input Capacitance vs. Gate to Source Voltage



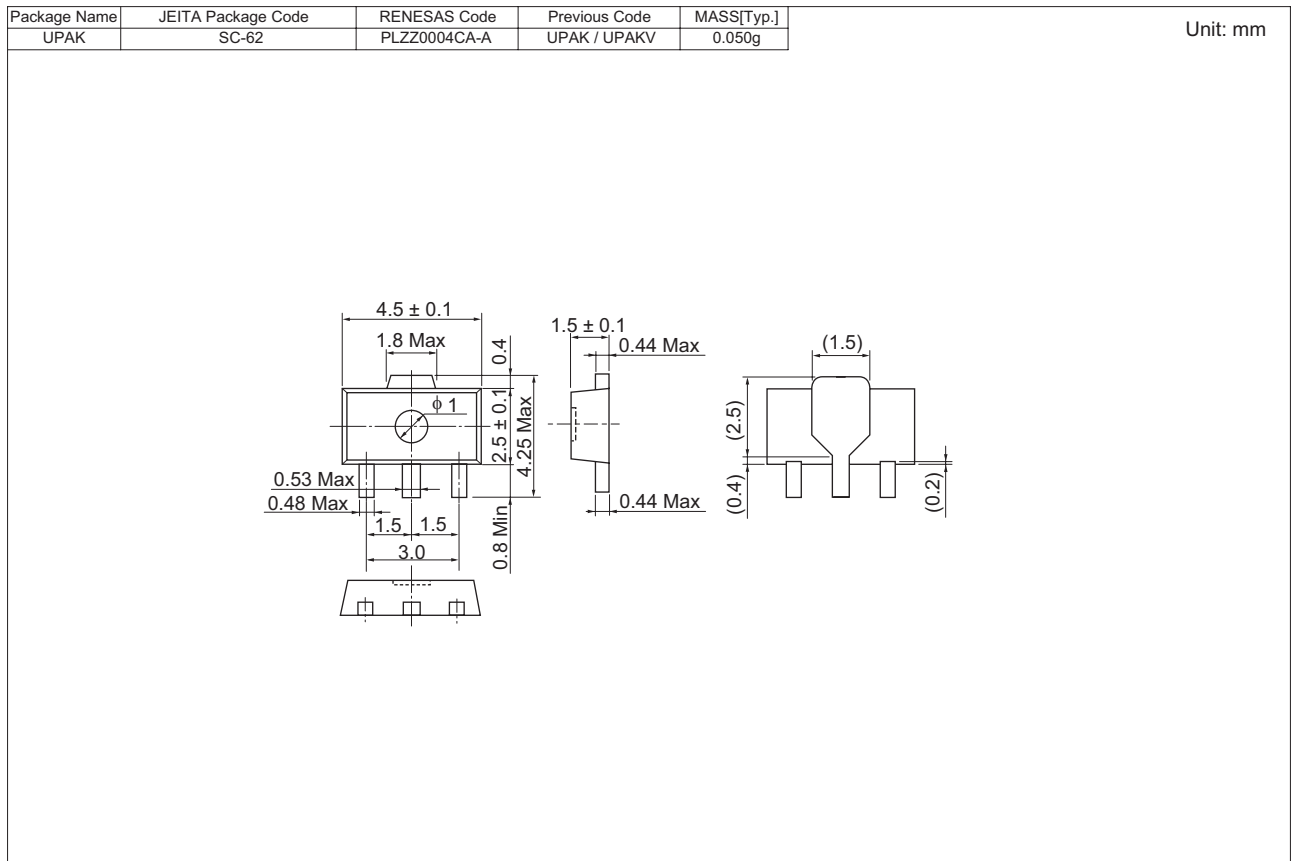
Reverse Drain Current vs. Source to Drain Voltage



Body-Drain Diode Forward Voltage vs. Case Temperature



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
RQK0301FGDQSTL-E	1000 pcs.	ϕ 178 reel, 12 mm Emboss taping

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