

2SK2851

Silicon N Channel MOS FET
High Speed Power Switching

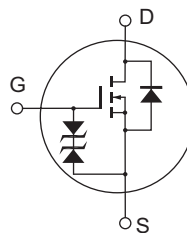
REJ03G1036-0200
(Previous: ADE-208-478)
Rev.2.00
Sep.07,2005

Features

- Low on-resistance
 $R_{DS(on)} = 0.055 \Omega$ typ. (at $V_{GS} = 10 \text{ V}$, $I_D = 2.5 \text{ A}$)
- 4 V gate drive devices.
- Large current capacitance
 $I_D = 5 \text{ A}$

Outline

RENESAS Package code: PRSS0003DC-A
(Package name: TO-92 Mod)



1. Source
2. Drain
3. Gate

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	5	A
Drain peak current	$I_{D(pulse)}^{*1}$	20	A
Body to drain diode reverse drain current	I_{DR}	5	A
Avalanche current	I_{AP}^{*3}	5	A
Avalanche energy	E_{AR}^{*3}	2.14	mJ
Channel dissipation	P_{ch}^{*2}	0.9	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
 2. Value at Ta = 25°C
 3. Value at Tch = 25°C, $R_g \geq 50\ \Omega$

Electrical Characteristics

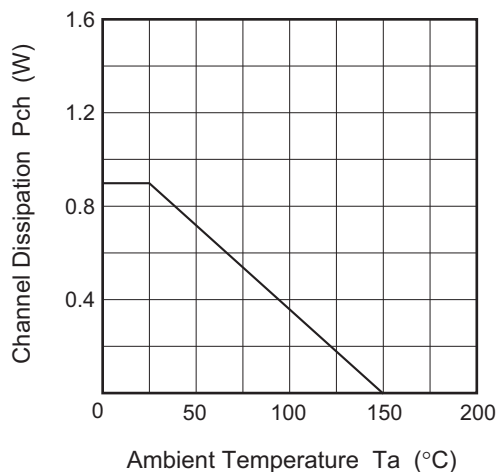
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	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	$V_{DS} = 60\text{ V}$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.055	0.07	Ω	$I_D = 2.5\text{ A}$, $V_{GS} = 10V^{*1}$
	$R_{DS(on)}$	—	0.07	0.1	Ω	$I_D = 2.5\text{ A}$, $V_{GS} = 4V^{*1}$
Forward transfer admittance	$ y_{fs} $	5	7	—	S	$I_D = 2.5\text{ A}$, $V_{DS} = 10V^{*1}$
Input capacitance	C_{iss}	—	500	—	pF	$V_{DS} = 10\text{ V}$, $V_{GS} = 0$, $f = 1\text{ MHz}$
Output capacitance	C_{oss}	—	260	—	pF	
Reverse transfer capacitance	C_{rss}	—	110	—	pF	
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$V_{GS} = 10\text{ V}$, $I_D = 2.5\text{ A}$, $R_L = 12\ \Omega$
Rise time	t_r	—	30	—	ns	
Turn-off delay time	$t_{d(off)}$	—	100	—	ns	
Fall time	t_f	—	75	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_D = 5\text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	50	—	ns	$I_F = 5\text{ A}$, $V_{GS} = 0$ $di_F/dt = 50\text{ A}/\mu s$

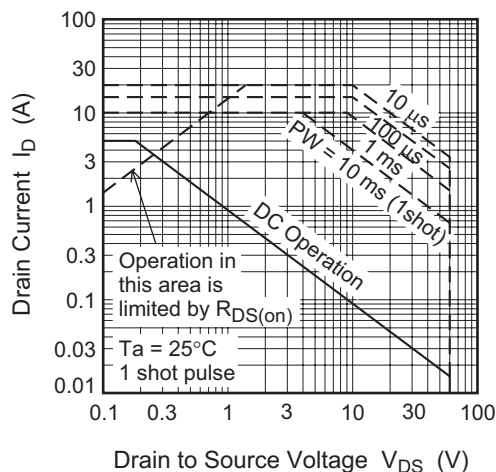
Note: 4. Pulse test

Main Characteristics

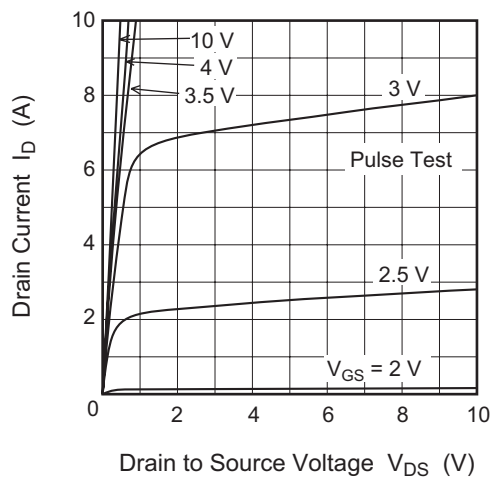
Power vs. Temperature Derating



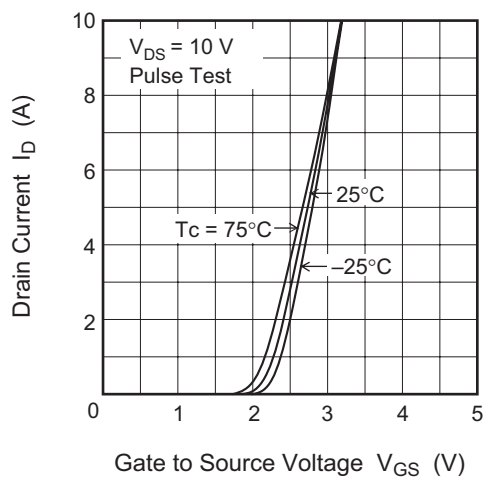
Maximum Safe Operation Area



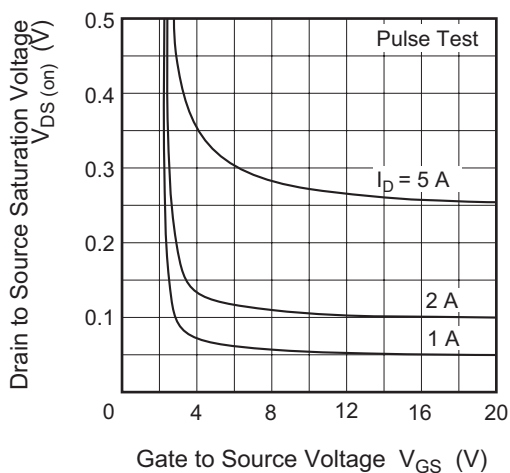
Typical Output Characteristics



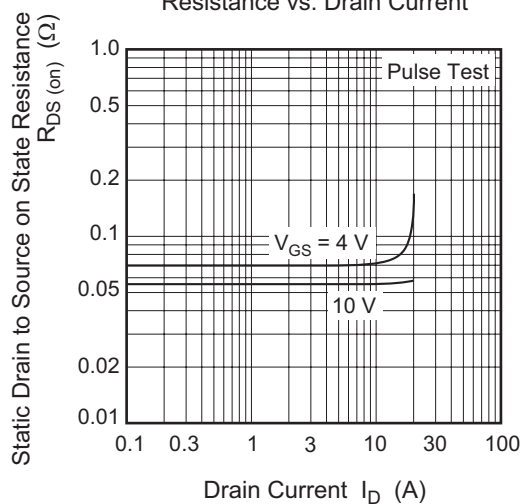
Typical Transfer Characteristics



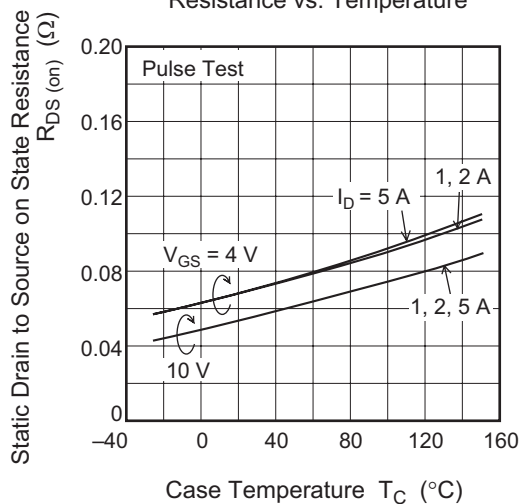
Drain to Source Saturation Voltage vs. Gate to Source Voltage



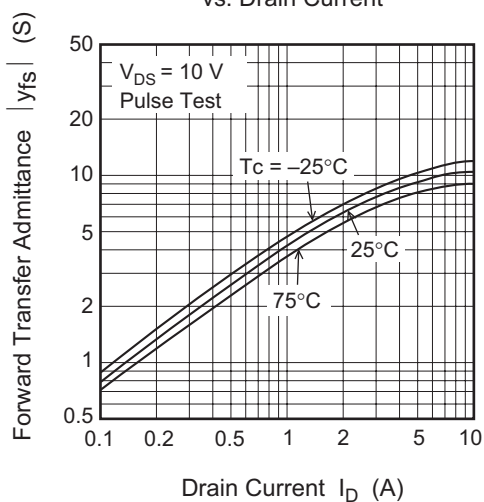
Static Drain to Source on State Resistance vs. Drain Current



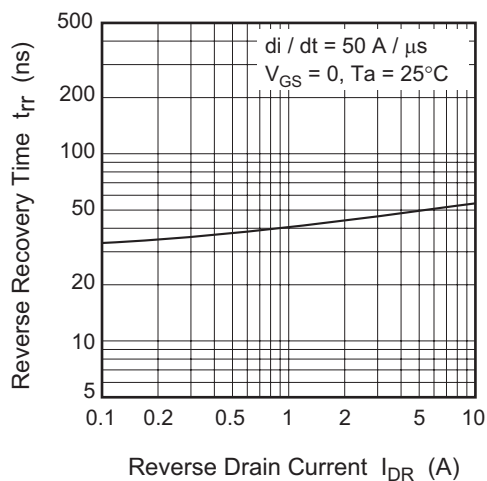
Static Drain to Source on State Resistance vs. Temperature



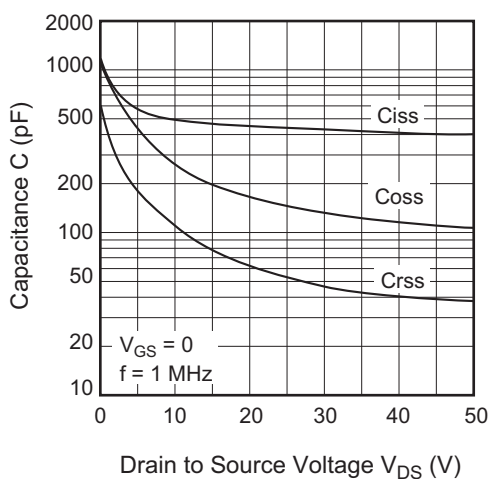
Forward Transfer Admittance vs. Drain Current



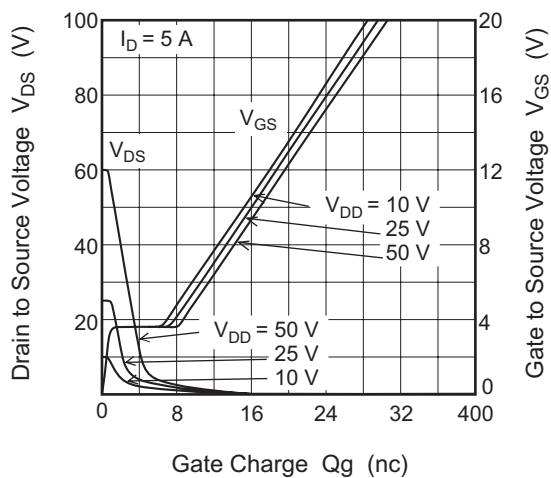
Body to Drain Diode Reverse Recovery Time



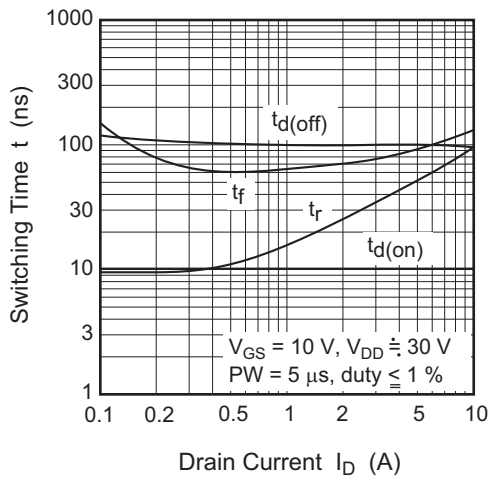
Typical Capacitance vs. Drain to Source Voltage

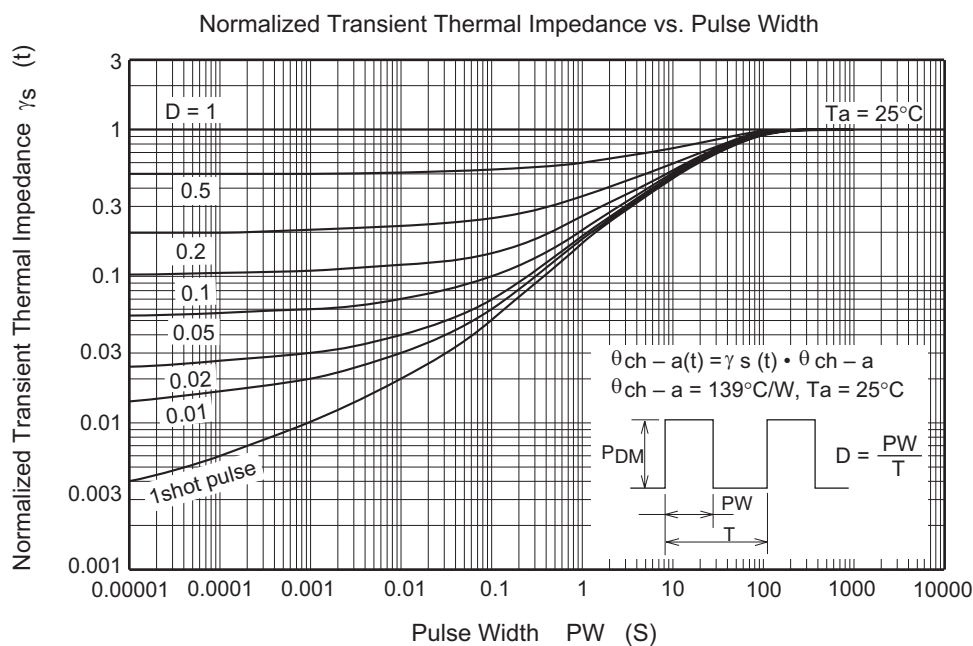
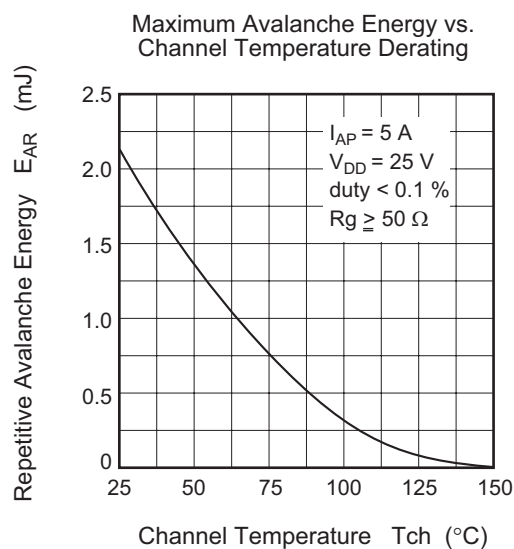
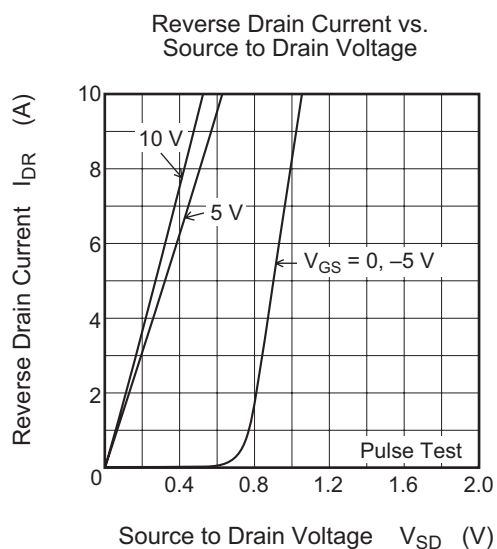


Dynamic Input Characteristics

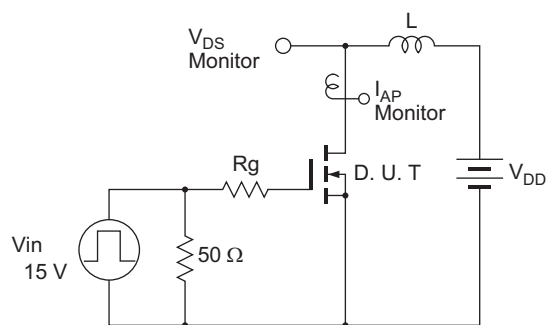


Switching Characteristics

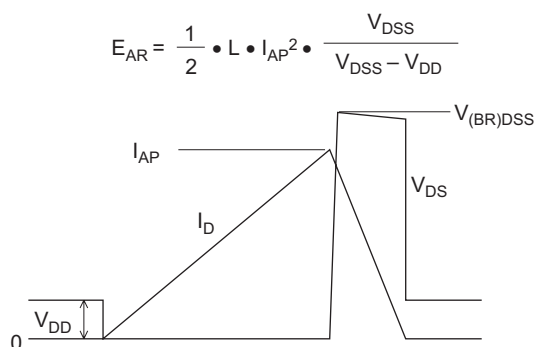


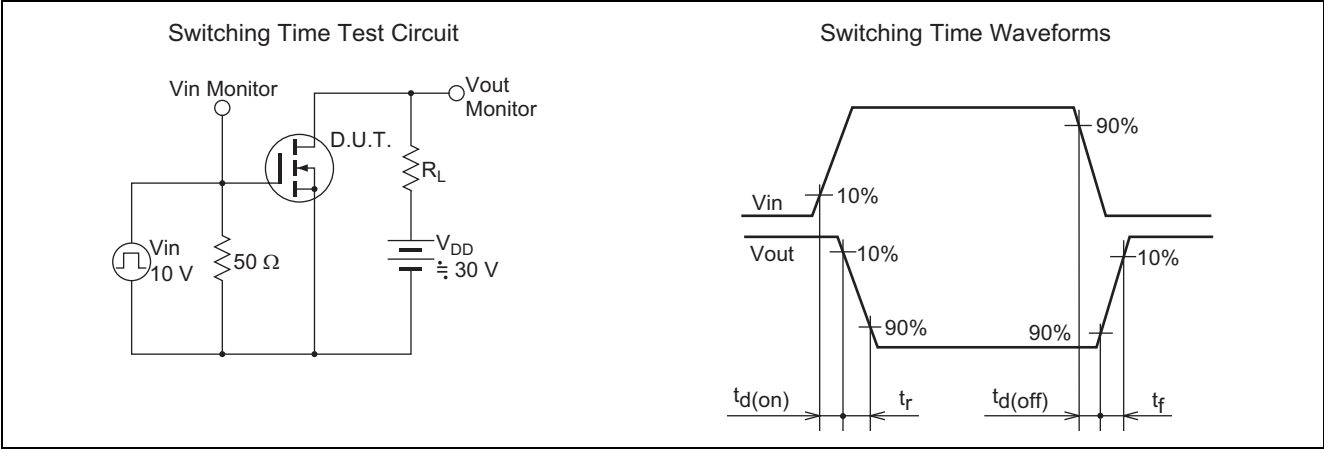


Avalanche Test Circuit

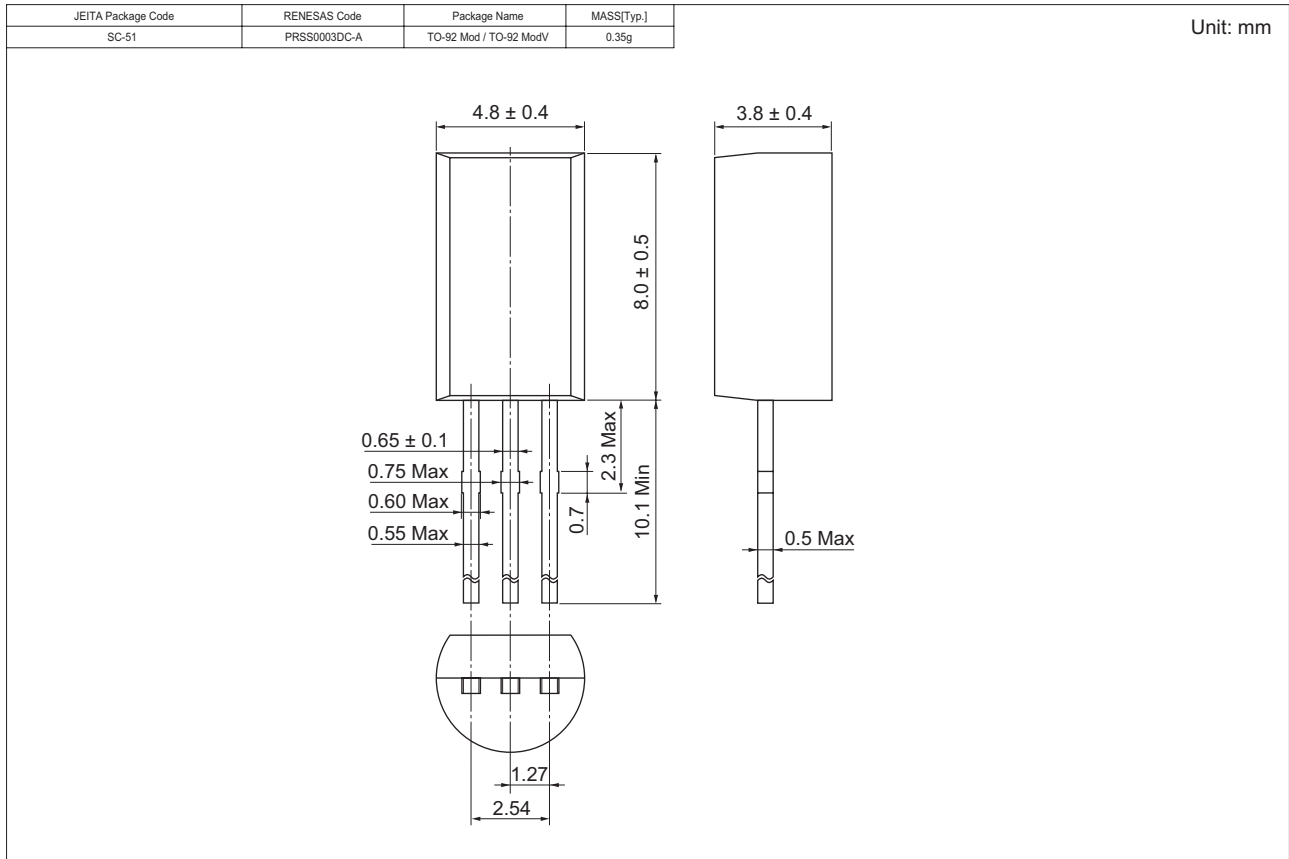


Avalanche Waveform





Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK2851TZ-E	2500 pcs	Taping

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