

RQK0302GGDQA

Silicon N Channel MOS FET
Power Switching

REJ03G1275-0400

Rev.4.00

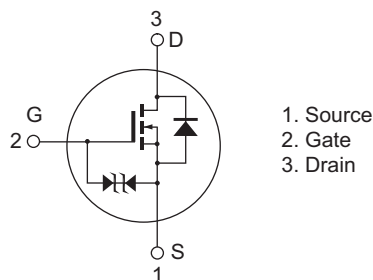
Jun 15, 2006

Features

- Low on-resistance
 $R_{DS(on)} = 92 \text{ m}\Omega$ typ ($V_{GS} = 10 \text{ V}$, $I_D = 1.3 \text{ A}$)
- Low drive current
- High speed switching
- 4.5 V gate drive

Outline

RENESAS Package code: PLSP0003ZB-A
(Package name: MPAK)



Note: Marking is "GG".

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 | 2.7 | A |
| Drain peak current | $I_{D(Pulse)}$ ^{Note1} | 5 | A |
| Body - drain diode reverse drain current | I_{DR} | 2.7 | A |
| Channel dissipation | P_{ch} ^{Note2} | 0.8 | 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. When using the glass epoxy board (FR-4: $40 \times 40 \times 1 \text{ mm}$)

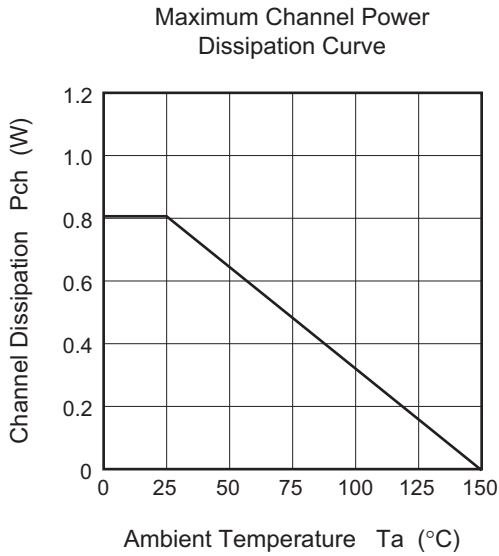
Electrical Characteristics

(Ta = 25°C)

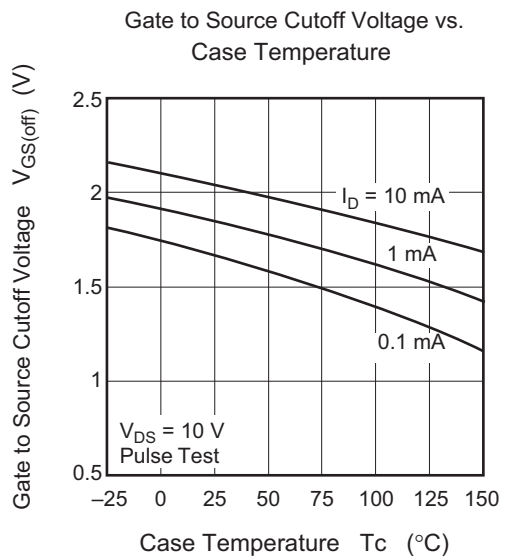
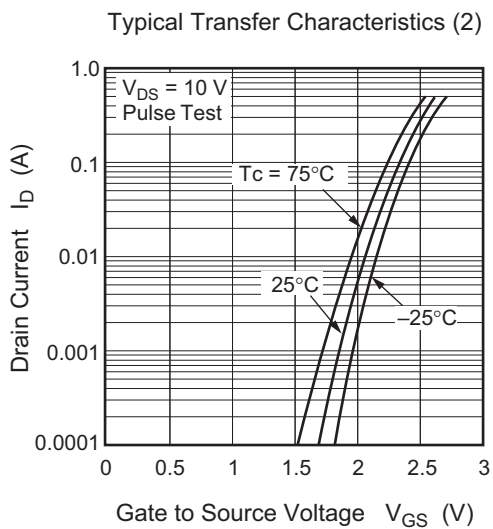
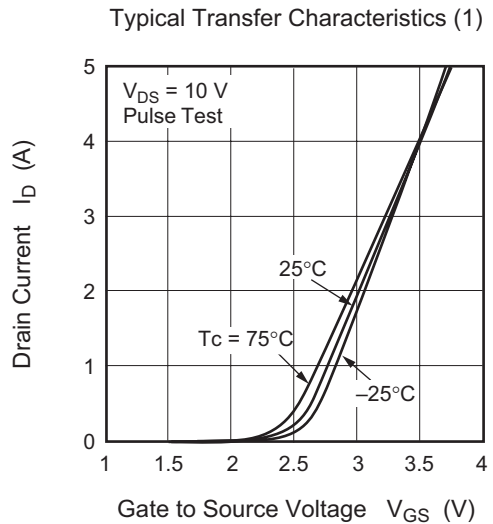
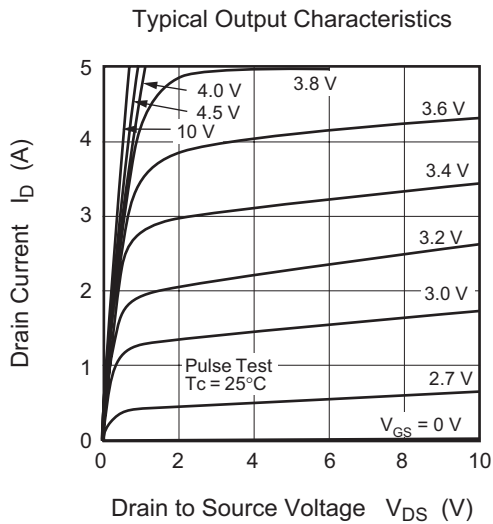
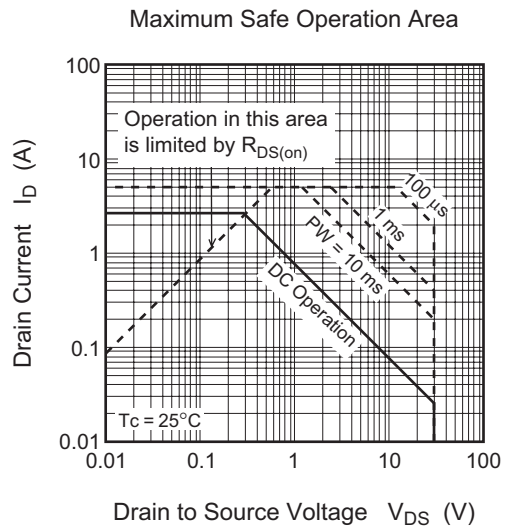
| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|-------------------------------------|---------------|----------|-----|----------|------------------|--|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 30 | — | — | V | $I_D = 10 \text{ mA}, V_{GS} = 0$ |
| Gate to source breakdown 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 | $R_{DS(on)}$ | — | 92 | 115 | $\text{m}\Omega$ | $I_D = 1.3 \text{ A}, V_{GS} = 10 \text{ V}^{\text{Note3}}$ |
| | $R_{DS(on)}$ | — | 122 | 171 | $\text{m}\Omega$ | $I_D = 1.3 \text{ A}, V_{GS} = 4.5 \text{ V}^{\text{Note3}}$ |
| Forward transfer admittance | $ y_{fs} $ | 2.1 | 3.5 | — | S | $I_D = 1.3 \text{ A}, V_{DS} = 10 \text{ V}^{\text{Note3}}$ |
| Input capacitance | C_{iss} | — | 175 | — | pF | $V_{DS} = 10 \text{ V}, V_{GS} = 0,$ $f = 1 \text{ MHz}$ |
| Output capacitance | C_{oss} | — | 34 | — | pF | |
| Reverse transfer capacitance | C_{rss} | — | 15 | — | pF | |
| Turn - on delay time | $t_{d(on)}$ | — | 9.5 | — | ns | $I_D = 1 \text{ A}, V_{GS} = 10 \text{ V},$ $R_L = 10 \Omega, R_g = 4.7 \Omega$ |
| Rise time | t_r | — | 37 | — | ns | |
| Turn - off delay time | $t_{d(off)}$ | — | 38 | — | ns | |
| Fall time | t_f | — | 8.2 | — | ns | |
| Total gate charge | Q_g | — | 3.3 | — | nC | $V_{DD} = 10 \text{ V}, V_{GS} = 10 \text{ V},$ $I_D = 2.7 \text{ A}$ |
| Gate to source charge | Q_{gs} | — | 0.6 | — | nC | |
| Gate to drain charge | Q_{gd} | — | 0.5 | — | nC | |
| Body - drain diode forward voltage | V_{DF} | — | 0.9 | — | V | $I_F = 1.5 \text{ A}, V_{GS} = 0^{\text{Note3}}$ |

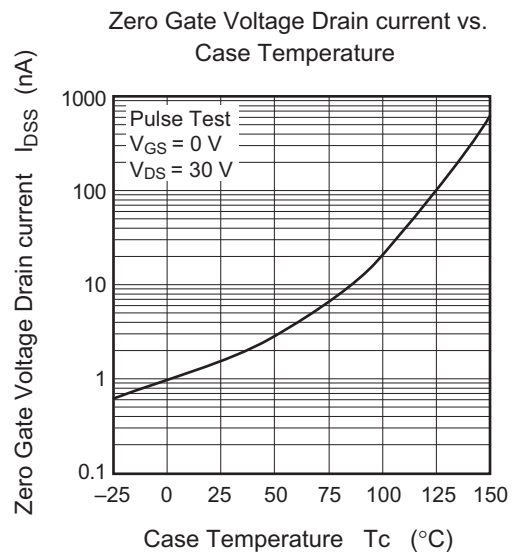
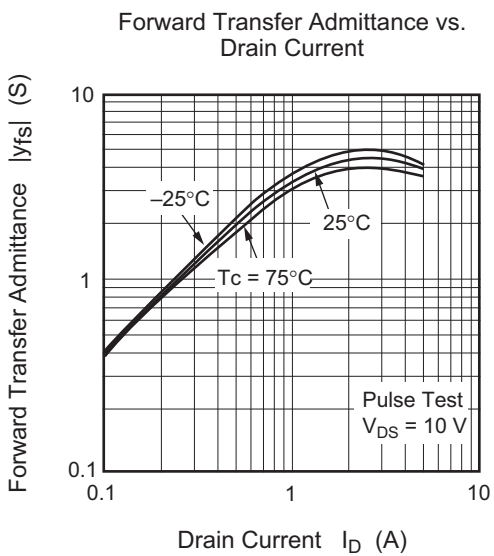
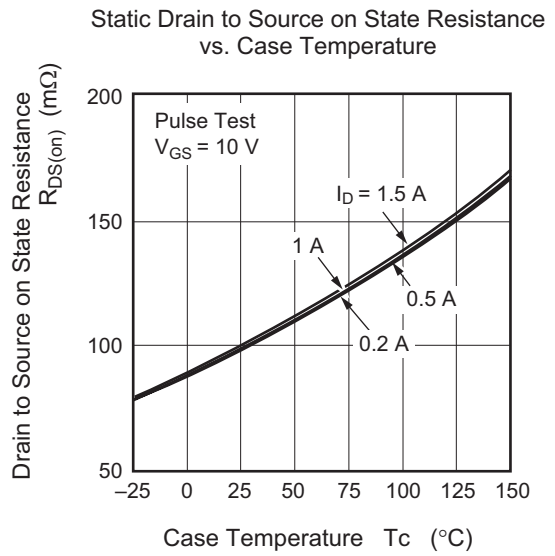
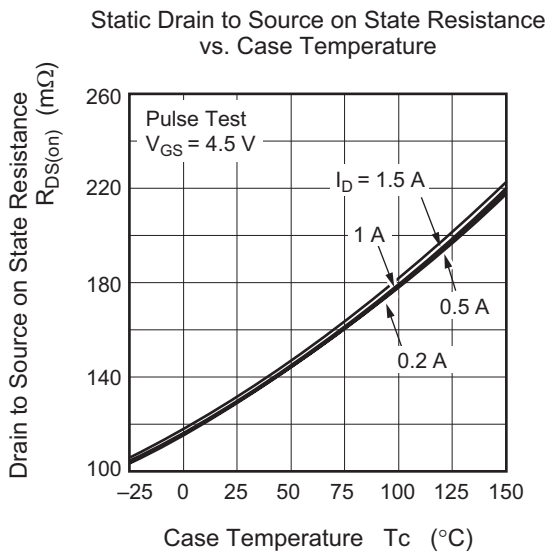
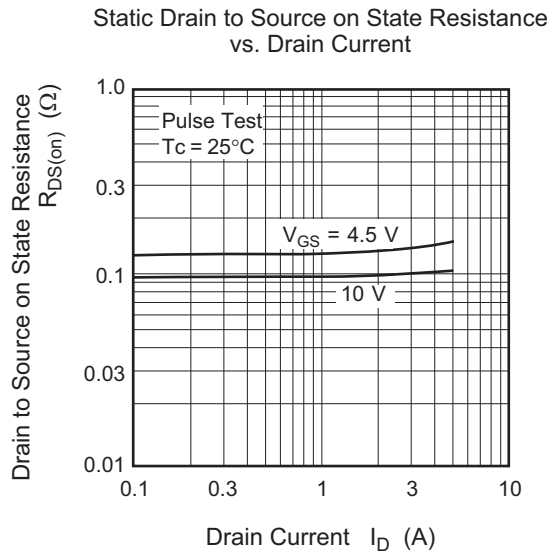
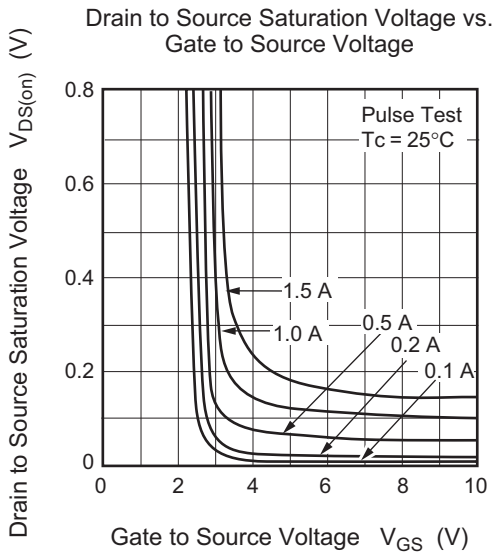
Notes: 3. Pulse test

Main Characteristics

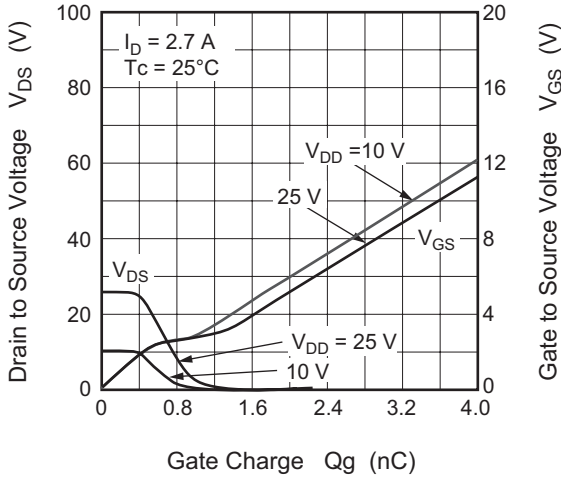


*When using the glass epoxy board (FR-4: 40 × 40 × 1 mm)

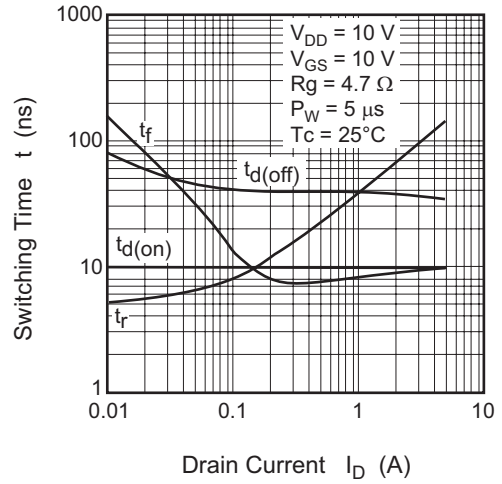




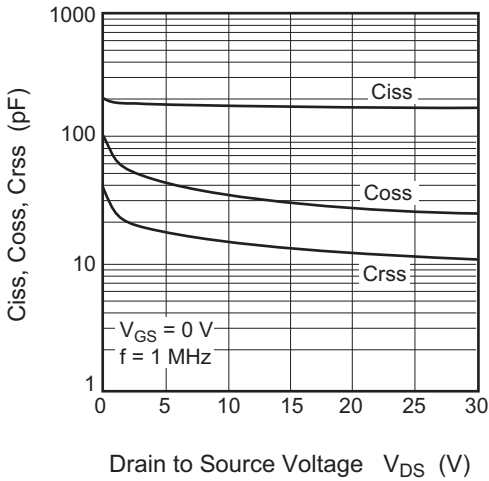
Dynamic Input Characteristics



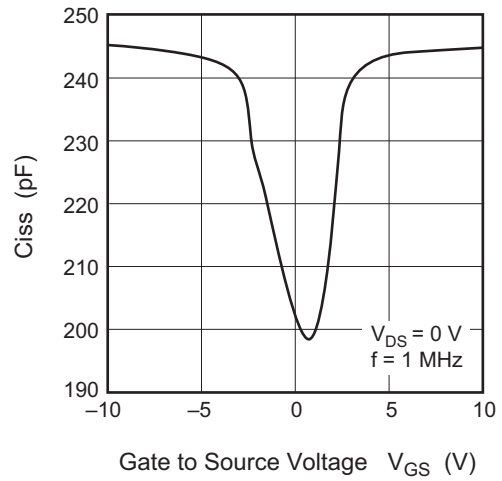
Switching Characteristics



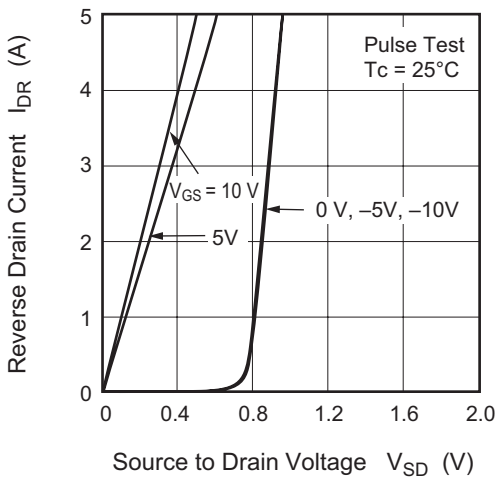
Typical Capacitance vs. Drain to Source Voltage



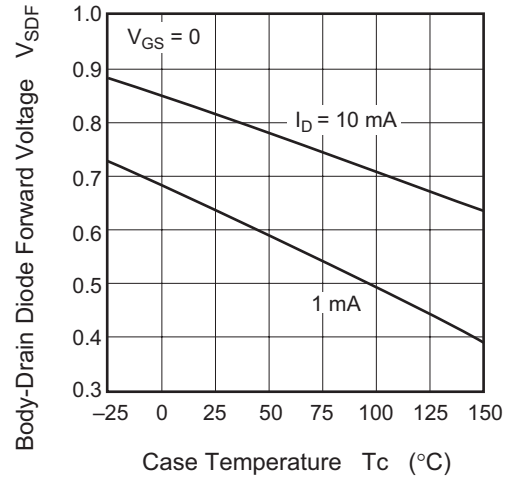
Input Capacitance vs. Gate to Source Voltage



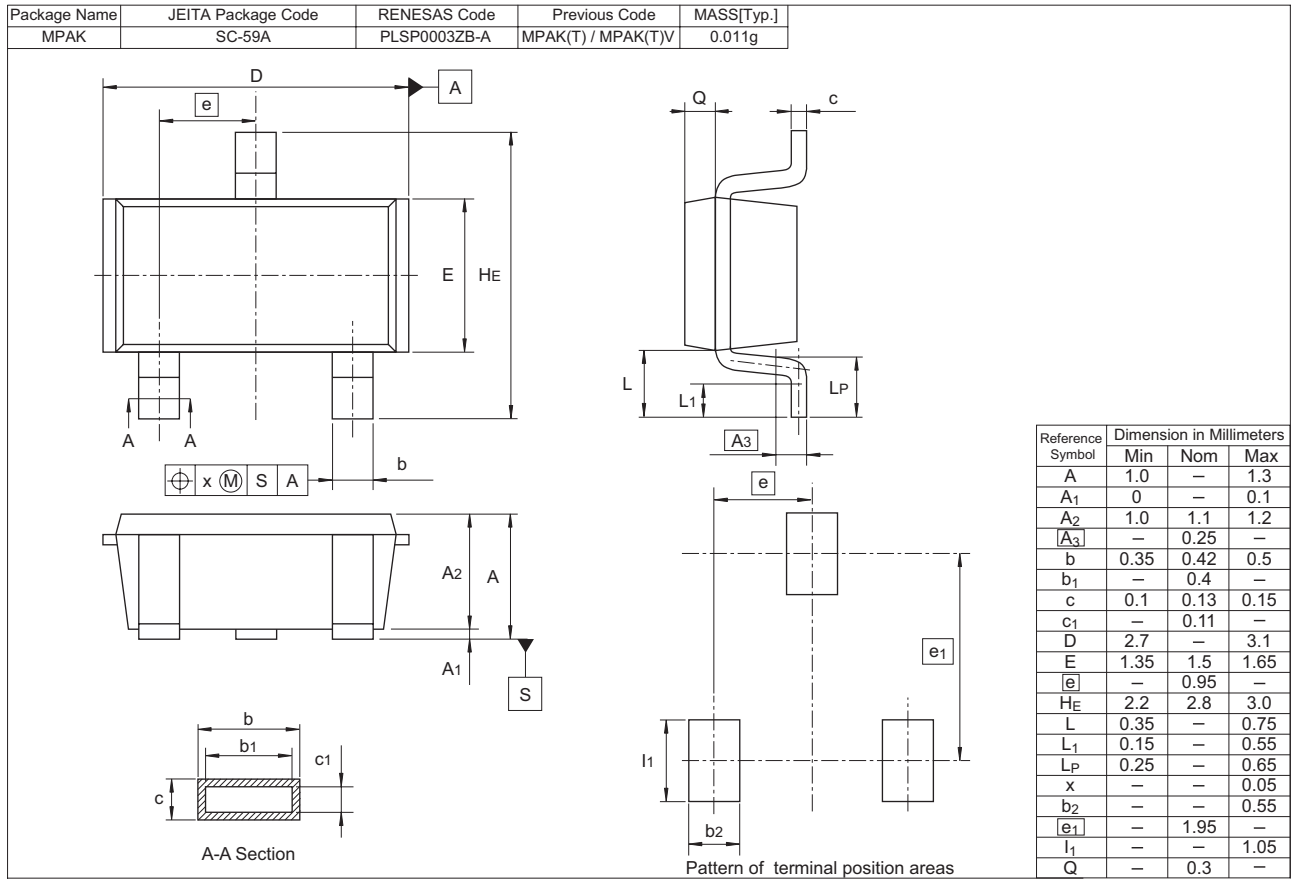
Reverse Drain Current vs. Source to Drain Voltage



Body-Drain Diode Forward Voltage vs. Case Temperature



Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|------------------|-----------|----------------------------------|
| RQK0302GGDQATL-E | 3000 pcs. | φ178 mm reel, 8 mm Emboss taping |

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