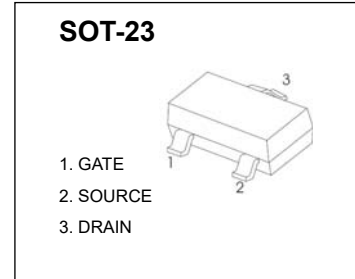




SOT-23 Plastic-Encapsulate MOSFETS

CJ2312 N-Channel 20-V(D-S) MOSFET

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| 20V | 31.8mΩ@4.5V | 5A |
| | 35.6mΩ@2.5V | |
| | 41.4mΩ@1.8V | |



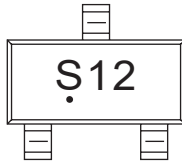
FEATURE

- TrenchFET Power MOSFET

APPLICATION

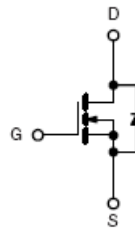
- DC/DC Converters
- Load Switching for Portable Applications

MARKING: S12



S12 = Device code
Solid dot = Green molding compound device.

Equivalent Circuit



Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|-----------------|------------|---------------------------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ± 8.0 | |
| Continuous Drain Current | I_D | 5 | A |
| Pulsed Drain Current | I_{DM} | 20 | |
| Continuous Source-Drain Diode Current | I_S | 1.04 | |
| Maximum Power Dissipation | P_D | 0.35 | W |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 357 | $^\circ\text{C}/\text{W}$ |
| Operation Junction and Storage Temperature Range | T_J, T_{stg} | -50 ~ +150 | $^\circ\text{C}$ |

MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25\text{ }^\circ\text{C}$ unless otherwise specified

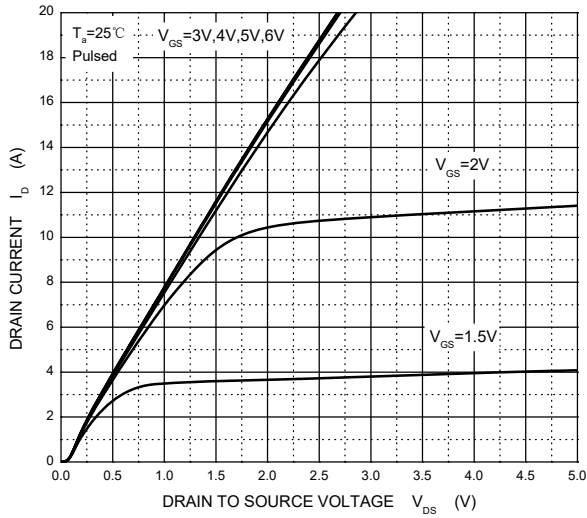
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|--|---------------|---|------|-------|-----------|----------|
| Static | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$ | 20 | | | V |
| Gate-source leakage | I_{GSS} | $V_{DS} = 0V, V_{GS} = \pm 8V$ | | | ± 100 | nA |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = 20V, V_{GS} = 0V$ | | | 1.0 | μA |
| Gate-source threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 0.45 | 0.7 | 1.0 | V |
| Drain-source on-state resistance ^a | $R_{DS(on)}$ | $V_{GS} = 4.5V, I_D = 5.0A$ | | 0.018 | 0.0318 | Ω |
| | | $V_{GS} = 2.5V, I_D = 4.7A$ | | 0.023 | 0.0356 | |
| | | $V_{GS} = 1.8V, I_D = 4.3A$ | | 0.030 | 0.0414 | |
| Forward transconductance ^a | g_{fs} | $V_{DS} = 10V, I_D = 5.0A$ | | 6 | | S |
| Dynamic^b | | | | | | |
| Input capacitance | C_{iss} | $V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$ | | 865 | | pF |
| Output capacitance | C_{oss} | | | 105 | | |
| Reverse transfer capacitance | C_{rss} | | | 55 | | |
| Gate resistance | R_g | $f = 1MHz$ | 0.5 | | 4.8 | Ω |
| Turn-on delay Time | $t_{d(on)}$ | $V_{GEN} = 5V, V_{DD} = 10V,$ $I_D = 4A, R_G = 1\Omega, R_L = 2.2\Omega$ | | | 10 | ns |
| Rise time | t_r | | | | 20 | |
| Turn-off Delay time | $t_{d(off)}$ | | | | 32 | |
| Fall time | t_f | | | | 12 | |
| Drain-source body diode characteristics | | | | | | |
| Forward diode voltage | V_{SD} | $V_{GS} = 0V, I_S = 4A$ | | 0.75 | 1.2 | V |

Notes :

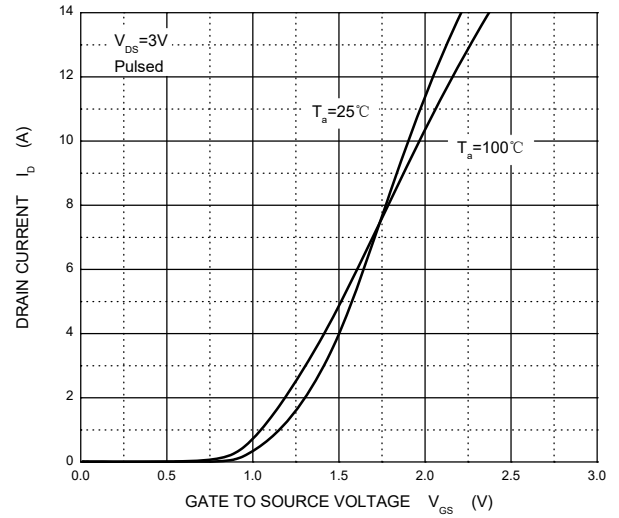
- a. Pulse Test : pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- b. These parameters have no way to verify.

Typical Characteristics

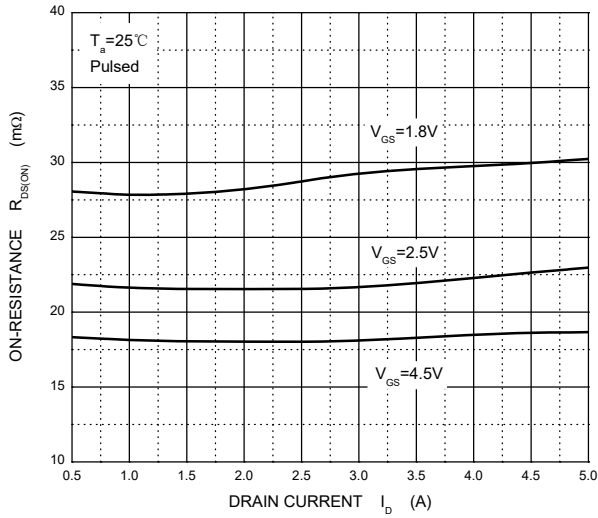
Output Characteristics



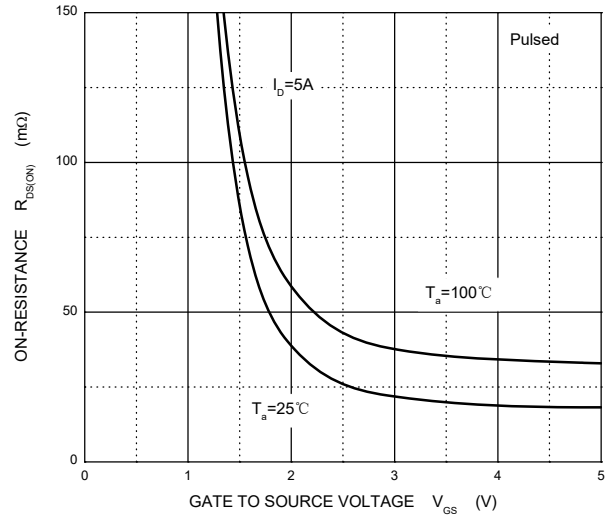
Transfer Characteristics



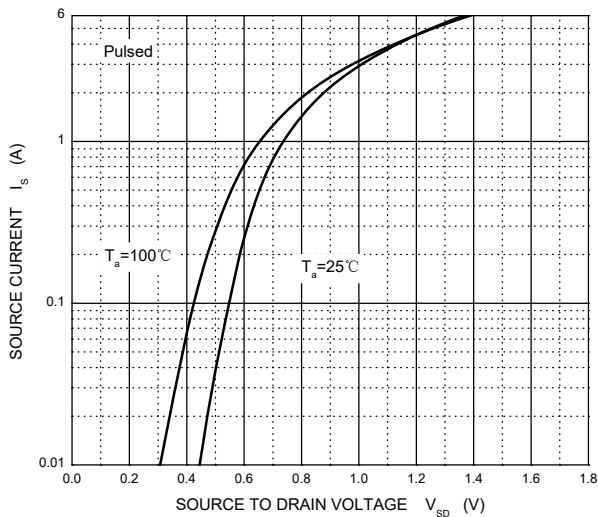
$R_{DS(ON)}$ — I_D



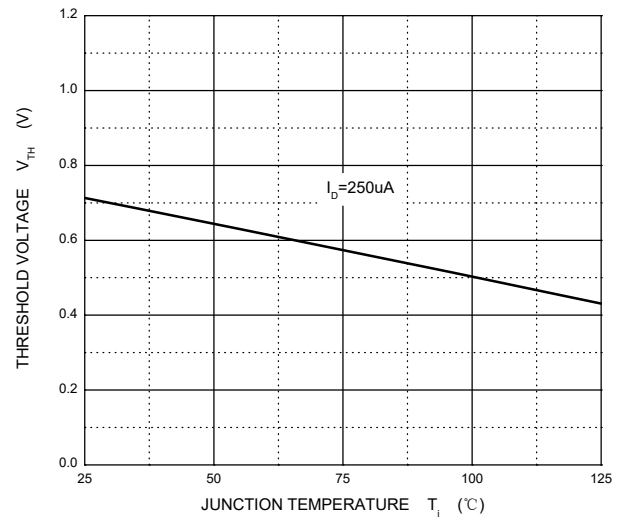
$R_{DS(ON)}$ — V_{GS}



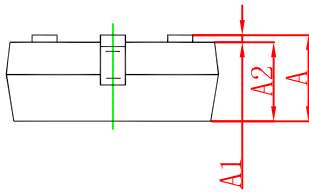
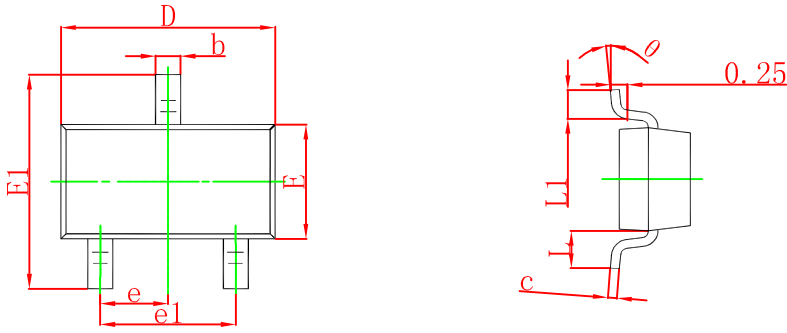
I_S — V_{SD}



Threshold Voltage

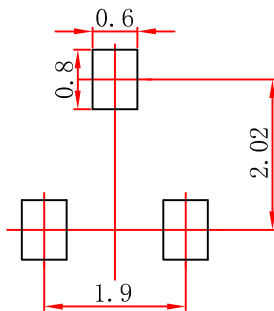


SOT-23 Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP | | 0.037 TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF | | 0.022 REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 8° |

SOT-23 Suggested Pad Layout



Note:

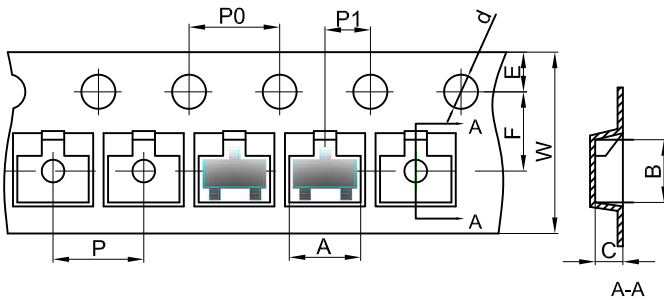
1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

NOTICE

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape



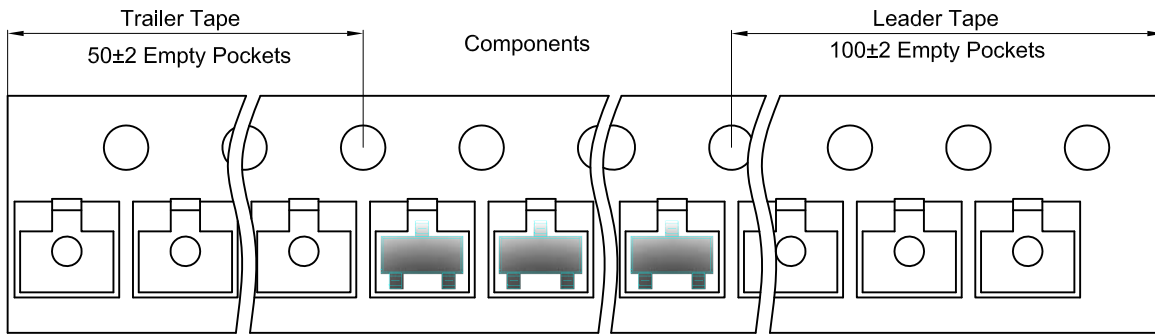
Packaging Description:

SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

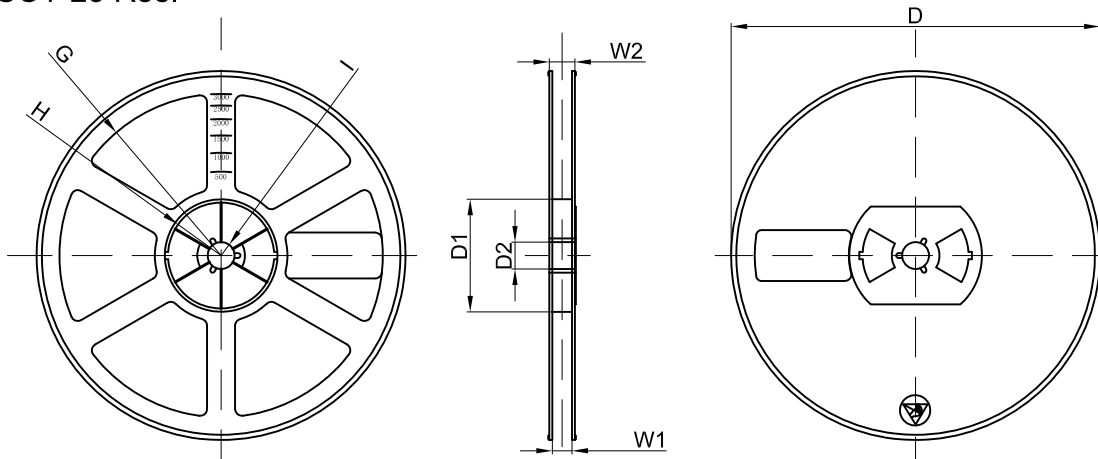
Dimensions are in millimeter

| Pkg type | A | B | C | d | E | F | P0 | P | P1 | W |
|----------|------|------|------|-------|------|------|------|------|------|------|
| SOT-23 | 3.15 | 2.77 | 1.22 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter

| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 |
|-------------|---------|-------|-------|--------|--------|-------|------|-------|
| 7"Dia | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch | 30,000 pcs | 203×203×195 | 120,000 pcs | 438×438×220 | |