重庆平伟实业股份有限公司
CHONGQING PINGWEI ENTERPRISE CO.,LTD

# PW3439KDW

## 20V N-Channel + P-Channel MOSFET

-0.66A -20V；$R_{DS(ON)typ}$=450mΩ@-4.5V，
$R_{DS(ON)typ}$=650mΩ@-2.5V,$R_{DS(ON)typ}$=950mΩ@-1.8V.
0.75A 20V；$R_{DS(ON)typ}$=190mΩ@4.5V，
$R_{DS(ON)typ}$=260mΩ@2.5V,$R_{DS(ON)typ}$=390mΩ@1.8V.

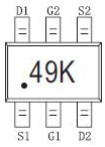
## FEATURE

- Surface Mount Package
- Low $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive
- ESD Protected Gate

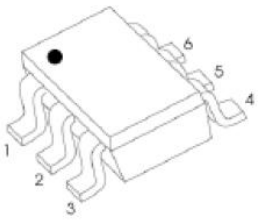
## Application

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics

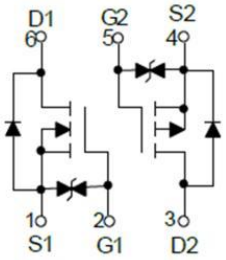
## MARKING:




SOT-363




Schematic diagram



## ABSOLUTE MAXIMUM RATINGS ($T_a$=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| **P-MOSFET** | | | |
| Drain-Source Voltage | $V_{DS}$ | -20 | V |
| Gate-Source Voltage | $V_{GS}$ | ±12 | V |
| Continuous Drain Current(1) | $I_D$ | -0.66 | A |
| Pulsed Drain Current(tp=10μs) | $I_{DM}$ | -1.2 | A |
| **N-MOSFET** | | | |
| Drain-Source Voltage | $V_{DS}$ | 20 | V |
| Gate-Source Voltage | $V_{GS}$ | ±12 | V |
| Continuous Drain Current(1) | $I_D$ | 0.75 | A |
| Pulsed Drain Current(tp=10μs) | $I_{DM}$ | 1.8 | A |
| **Temperature and Thermal Resistance** | | | |
| Thermal Resistance from Junction to Ambient(2) | $R_{\theta JA}$ | 833 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55~ +150 | ℃ |
| Lead Temperature for Soldering Purposes(1/8” from case for 10s) | $T_L$ | 260 | ℃ |

**P-channel MOSFET ELECTRICAL CHARACTERISTICS($T_a$=25℃ unless otherwise noted)**

| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|---|---|---|---|---|---|
| **STATIC CHARACTERISTICS** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =-250μA | -20 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =-20V,$V_{GS}$ = 0V | | | -1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±10V, $V_{DS}$ = 0V | | | ±20 | μA |
| Gate threshold voltage(2) | $V_{GS(th)}$ | $V_{DS}$ =VGS, $I_D$ =-250μA | -0.35 | -0.60 | -1.1 | V |
| Drain-source on-resistance(2) | $R_{DS(on)}$ | $V_{GS}$ =-4.5V, $I_D$ =-1A | | 450 | 580 | mΩ |
| | | $V_{GS}$ =-2.5V, $I_D$ =-0.8A | | 650 | 840 | |
| | | $V_{GS}$ =-1.8V, $I_D$ =-0.5A | | 950 | | |
| Forward tranconductance(2) | $g_{FS}$ | $V_{DS}$ =-10V, $I_D$ =-0.54A | | 1.2 | | S |
| Diode forward voltage | $V_{DS}$ | $I_S$=-0.5A, $V_{GS}$ = 0V | | | -1.2 | V |
| **DYNAMIC CHARACTERISTICS(4)** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ =-16V,$V_{GS}$ =0V,f =1MHz | | 113 | | pF |
| Output Capacitance | $C_{oss}$ | | | 15 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 9 | | |
| **SWITCHING CHARACTERISTICS(3,4)** | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DS}$=-10V,$I_D$=-200mA, $V_{GS}$=-4.5V,$R_G$=10Ω | | 9 | | nS |
| Turn-on rise time | $t_r$ | | | 5.7 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 32.6 | | |
| Turn-off fall time | $t_f$ | | | 20.3 | | |

**N-channel MOSFET ELECTRICAL CHARACTERISTICS($T_a$=25°C unless otherwise noted)**

| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|---|---|---|---|---|---|
| **STATIC CHARACTERISTICS** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | 20 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =20V,$V_{GS}$ = 0V | | | 1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±10V, $V_{DS}$ = 0V | | | ±20 | μA |
| Gate threshold voltage(2) | $V_{GS(th)}$ | $V_{DS}$ =VGS, $I_D$ =250μA | 0.35 | 0.75 | 1.1 | V |
| Drain-source on-resistance(2) | $R_{DS(on)}$ | $V_{GS}$ =4.5V, $I_D$ =650mA | | 190 | 260 | mΩ |
| | | $V_{GS}$ =2.5V, $I_D$ =550mA | | 260 | 360 | |
| | | $V_{GS}$ =1.8V, $I_D$ =450mA | | 390 | 590 | |
| Forward tranconductance | $g_{FS}$ | $V_{DS}$ =10V, $I_D$ =800mA | | 1.6 | | S |
| Diode forward voltage(3) | $V_{DS}$ | $I_S$=0.15A, $V_{GS}$ = 0V | | | 1.2 | V |
| **DYNAMIC CHARACTERISTICS(4)** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=16V,$V_{GS}$=0V,f=1MHz | | 79 | 120 | pF |
| Output Capacitance | $C_{oss}$ | | | 13 | 20 | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 9 | 15 | |
| **SWITCHING CHARACTERISTICS(3,4)** | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DS}$=10V,$I_D$=500mA, $V_{GS}$=4.5V,$R_G$=10Ω | | 6.7 | | nS |
| Turn-on rise time | $t_r$ | | | 4.8 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 17.3 | | |
| Turn-off fall time | $t_f$ | | | 7.4 | | |

**Notes:**

1.Surface mounted on FR4 board using the minimum recommended pad size.

2.Pulse Test : Pulse Width=300μs, Duty Cycle=2%.

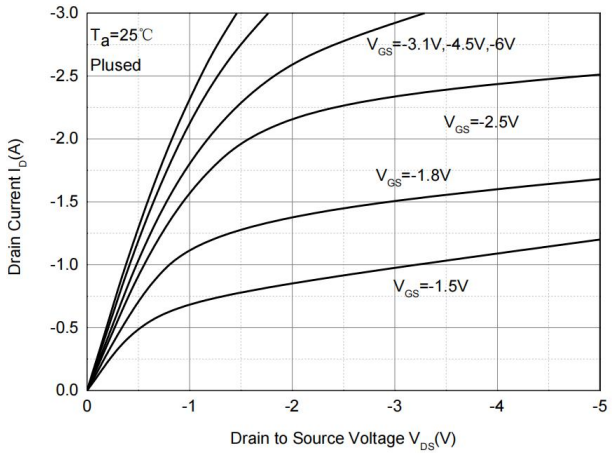
3.Switching characteristics are independent of operating junction temperatures.

4.Guaranteed by design, not subject to producting.

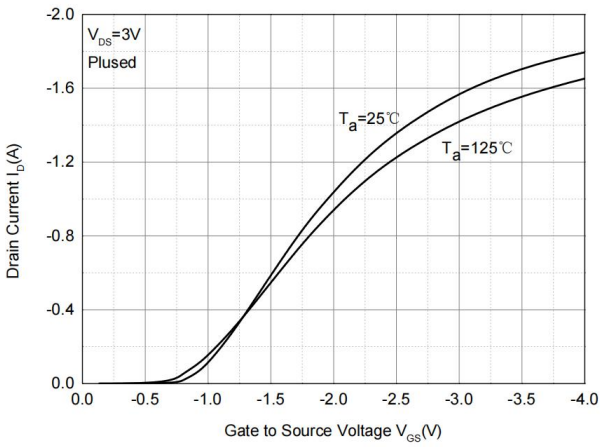
## Typical Electrical and Thermal Characteristics

P-Channel MOS

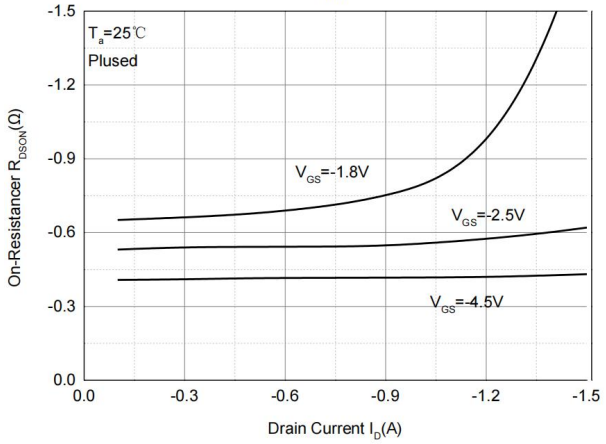
Output Characteristics



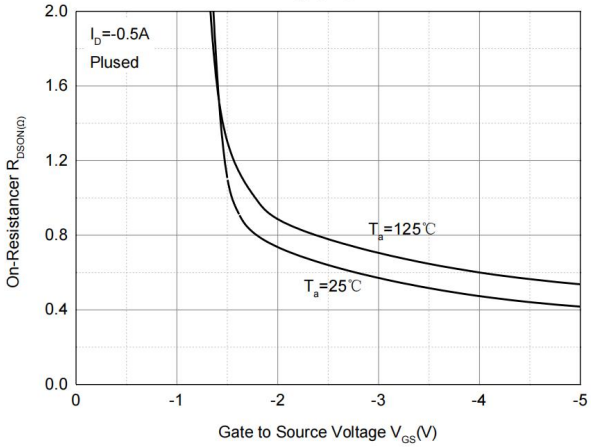

Transfer Characteristics



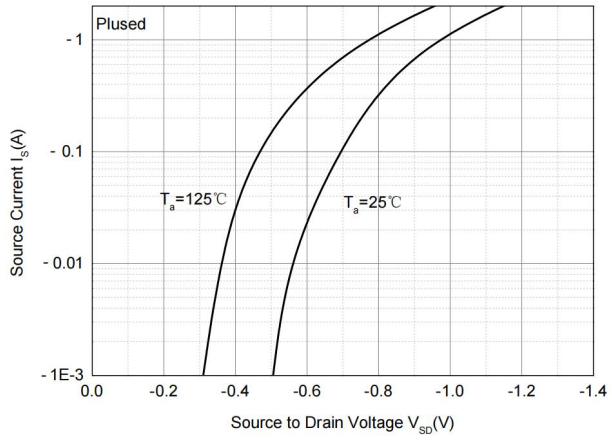

RDS(ON)-ID



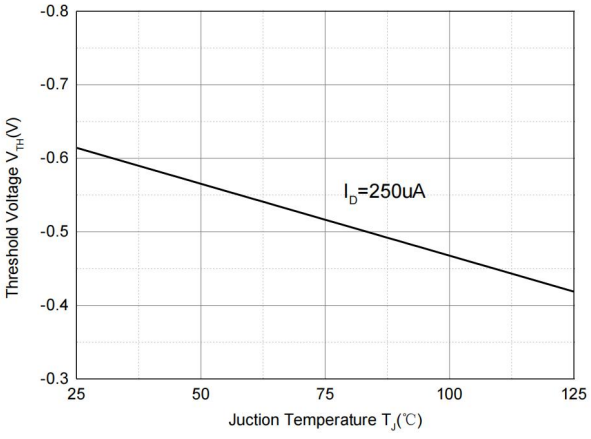

RDS(ON)-VGS

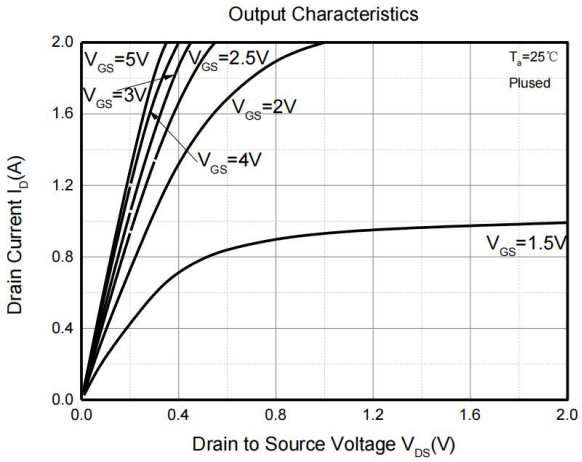


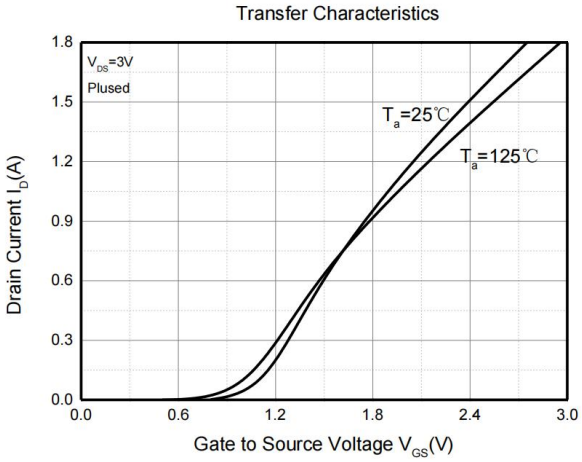

IS-VSD

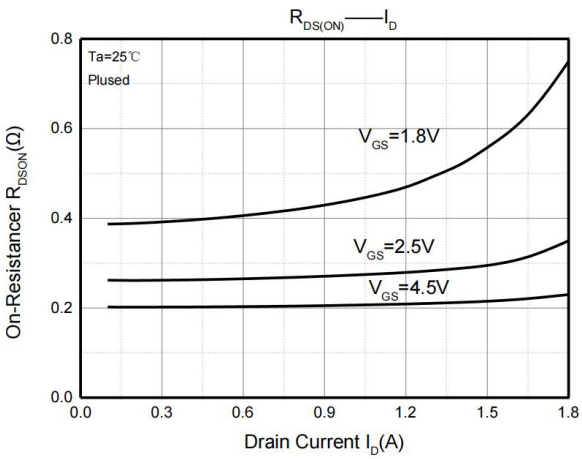


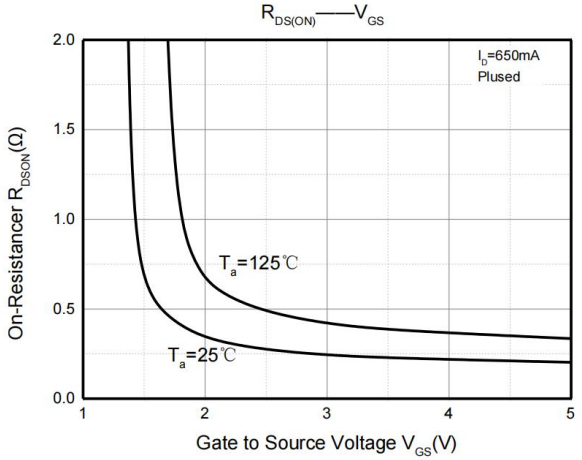

Threshold Voltage

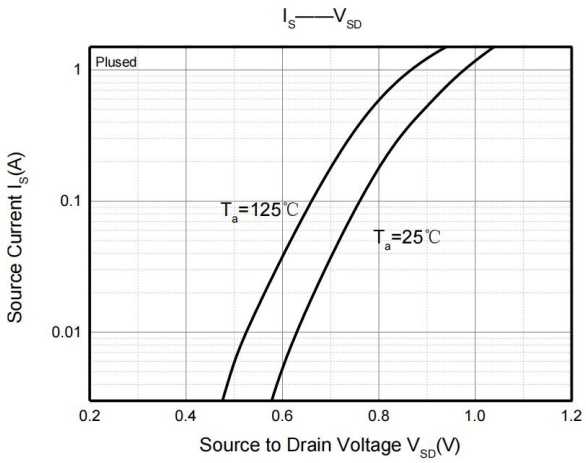


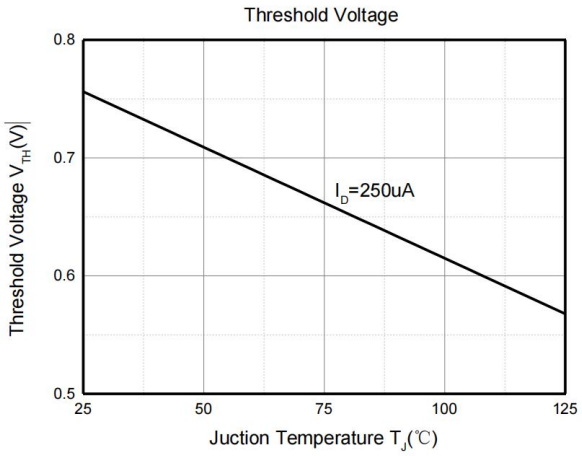

Output Characteristics
$V_{GS}$=5V
$V_{GS}$=2.5V
$V_{GS}$=3V
$V_{GS}$=2V
$V_{GS}$=4V
$V_{GS}$=1.5V
$T_a$=25℃
Plused
Drain Current $I_D$(A)
Drain to Source Voltage $V_{DS}$(V)


Transfer Characteristics
$V_{DS}$=3V
Plused
$T_a$=25℃
$T_a$=125℃
Drain Current $I_D$(A)
Gate to Source Voltage $V_{GS}$(V)

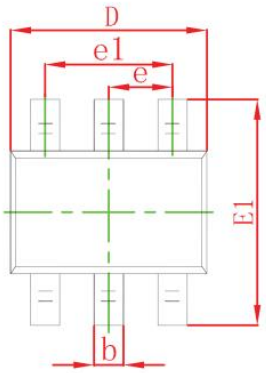

$R_{DS(ON)}$——$I_D$
Ta=25℃
Plused
$V_{GS}$=1.8V
$V_{GS}$=2.5V
$V_{GS}$=4.5V
On-Resistancer $R_{DSON}$(Ω)
Drain Current $I_D$(A)

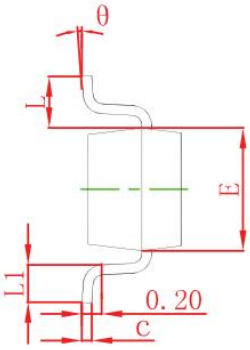

$R_{DS(ON)}$——$V_{GS}$
$I_D$=650mA
Plused
$T_a$=125℃
$T_a$=25℃
On-Resistancer $R_{DSON}$(Ω)
Gate to Source Voltage $V_{GS}$(V)

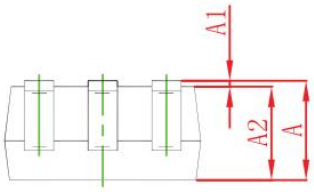

$I_S$——$V_{SD}$
Plused
$T_a$=125℃
$T_a$=25℃
Source Current $I_S$(A)
Source to Drain Voltage $V_{SD}$(V)


Threshold Voltage
$I_D$=250uA
Threshold Voltage $V_{TH}$(V)
Juction Temperature $T_J$(℃)

**SOT-363 Package Information**



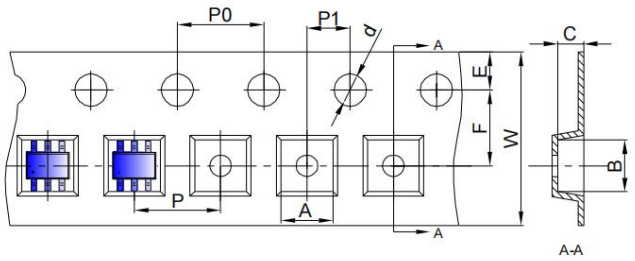




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.150 | 0.350 | 0.006 | 0.014 |
| c | 0.100 | 0.150 | 0.004 | 0.006 |
| D | 2.000 | 2.200 | 0.079 | 0.087 |
| E | 1.150 | 1.350 | 0.045 | 0.053 |
| E1 | 2.150 | 2.400 | 0.085 | 0.094 |
| e | 0.650 TYP | | 0.026 TYP | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L | 0.525 REF | | 0.021 REF | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |

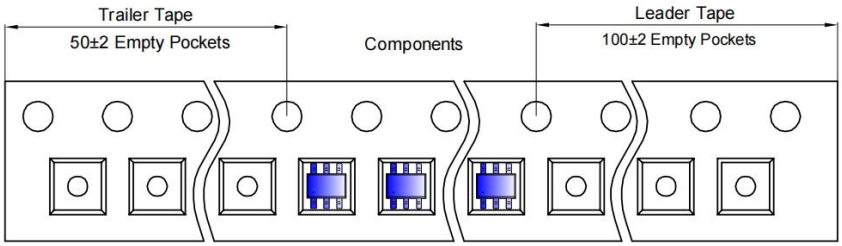
## SOT-363 Tape and Reel

### SOT-363 Embossed Carrier Tape

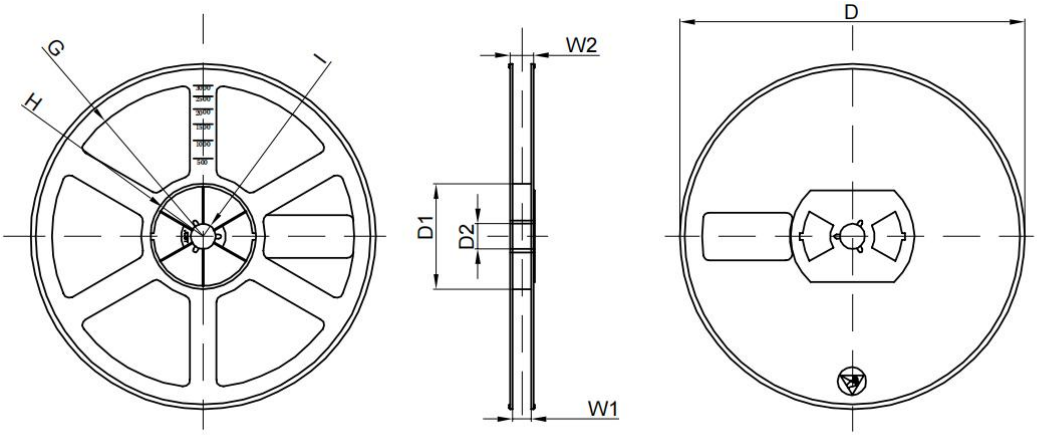



| Dimensions are in millimeter | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pkg type | A | B | C | d | E | F | P0 | P | P1 | W |
| SOT-363 | 2.55 | 2.55 | 1.20 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 12.00 |

### SOT-363 Tape Leader and Trailer




### SOT-363 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 | |