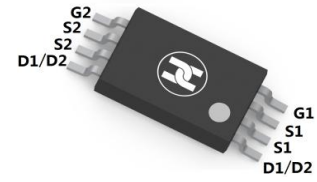
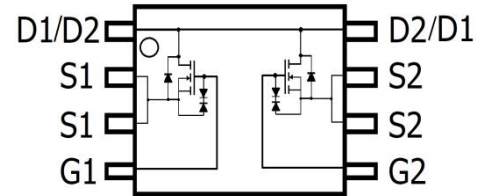


DUAL N-CHANNEL ENHANCEMENT MODE FET

FEATURES

- Ultra low on-resistance: $V_{DS}=20V, I_D=7.5A, R_{DS(ON)} \leq 16m\Omega @ V_{GS}=10V$
- Low gate charge
- ESD protected
- Surface Mount device


TSSOP-8


MECHANICAL DATA

- Case: TSSOP-8
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: not available

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} | ± 12 | V |
| Continuous drain current | I_D | $T_A = 25^\circ\text{C}$ | 7.5 |
| | | $T_A = 70^\circ\text{C}$ | 6 |
| Pulsed drain current | I_{DM} | 30 | A |
| Power dissipation | P_D | $T_A = 25^\circ\text{C}$ | 1.5 |
| | | $T_A = 70^\circ\text{C}$ | 0.96 |
| Thermal resistance from Junction to ambient | $R_{\theta JA}$ | 120 | $^\circ\text{C/W}$ |
| Thermal resistance from Junction to Lead | $R_{\theta JL}$ | 70 | $^\circ\text{C/W}$ |
| Junction temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{STG} | -55 ~ +150 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Conditions |
|------------------------------------|-----------------|----------|------|----------|-----------|---|
| Drain-Source breakdown voltage | $V_{(BR)DSS}^*$ | 20 | | | V | $V_{GS}=0V, I_D=250\mu A$ |
| Zero gate voltage drain current | I_{DSS}^* | | | 1 | μA | $V_{DS}=16V, V_{GS}=0V$ |
| Gate-body leakage current | I_{GSS}^* | | | ± 10 | μA | $V_{DS}=0V, V_{GS}=\pm 10V$ |
| Gate-threshold voltage | $V_{GS(th)}^*$ | 0.5 | 0.71 | 1 | V | $V_{DS}=V_{GS}, I_D=250\mu A$ |
| Gate-Source Breakdown Voltage | BV_{GSO} | ± 12 | | | V | $V_{DS}=0V, I_G=\pm 250\mu A$ |
| On-State Drain Current | $I_{D(ON)}^*$ | 30 | | | A | $V_{DS}=5V, V_{GS}=4.5V$ |
| Drain-source on-resistance | $R_{DS(ON)}^*$ | 10 | 13 | 16 | $m\Omega$ | $V_{GS}=10V, I_D=7.5A$ |
| | | 14 | 18 | 22 | $m\Omega$ | $V_{GS}=10V, I_D=7.5A, T_J=125^\circ\text{C}$ |
| | | 11.5 | 15 | 18 | $m\Omega$ | $V_{GS}=4.5V, I_D=7A$ |
| | | 13 | 16.8 | 20 | $m\Omega$ | $V_{GS}=3.6V, I_D=6A$ |
| | | 15 | 19 | 24 | $m\Omega$ | $V_{GS}=2.5V, I_D=6A$ |
| | | 20 | 26 | 34 | $m\Omega$ | $V_{GS}=1.8V, I_D=5A$ |
| Forward transconductance | g_{FS} | | 30 | | S | $V_{DS}=5V, I_D=7A$ |
| Diode forward voltage | V_{SD} | | 0.74 | 1 | V | $I_S=1A, V_{GS}=0V$ |
| Diode forward current | I_S | | | 2.5 | A | |
| Input capacitance | C_{iss} | | 1390 | | pF | $V_{DS}=10V, V_{GS}=0V, f=1\text{MHz}$ |
| Output capacitance | C_{oss} | | 190 | | pF | |
| Reverse transfer capacitance | C_{rss} | | 150 | | pF | |
| Gate resistance | R_g | | 1.5 | | Ω | $V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$ |
| Total gate charge | Q_g | | 15.4 | | nC | $V_{GS}=4.5V, V_{DS}=10V, I_D=7.5A$ |
| Gate-source charge | Q_{gs} | | 1.4 | | nC | |
| Gate-drain charge | Q_{gd} | | 4 | | nC | |
| Turn-on delay time | $t_{d(on)}$ | | 6.2 | | nS | $V_{GS}=4.5V, V_{DS}=10V, R_{GEN}=3\Omega, R_L=1.3\Omega$ |
| Turn-on rise time | t_r | | 11 | | nS | |
| Turn-off delay time | $t_{d(off)}$ | | 40.5 | | nS | |
| Turn-off fall time | t_f | | 10 | | nS | |
| Body Diode Reverse Recovery Time | t_{rr} | | 15 | | nS | $I_F=7.5A, dI/dt=100A/\mu s$ |
| Body Diode Reverse Recovery Charge | Q_{rr} | | 5.1 | | nC | $I_F=7.5A, dI/dt=100A/\mu s$ |

*Pulse test ; Pulse width $\leq 300\mu s$, Duty cycle $\leq 0.5\%$.

DUAL N-CHANNEL ENHANCEMENT MODE FET

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

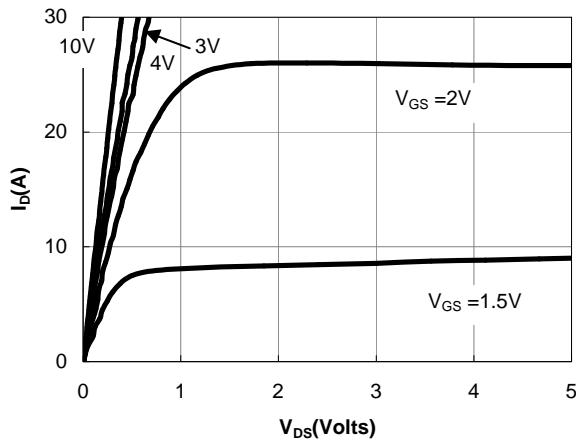


Figure 1: On-Regions Characteristics

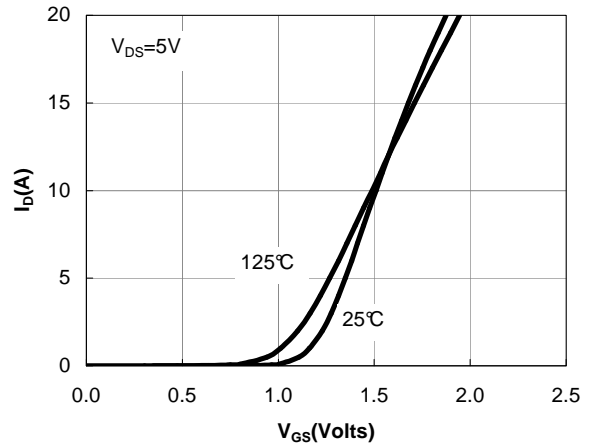


Figure 2: Transfer Characteristics

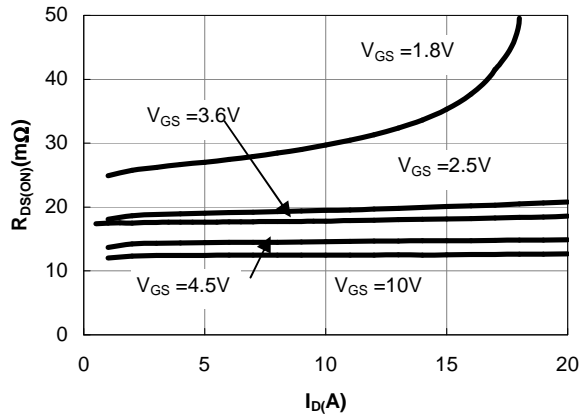


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

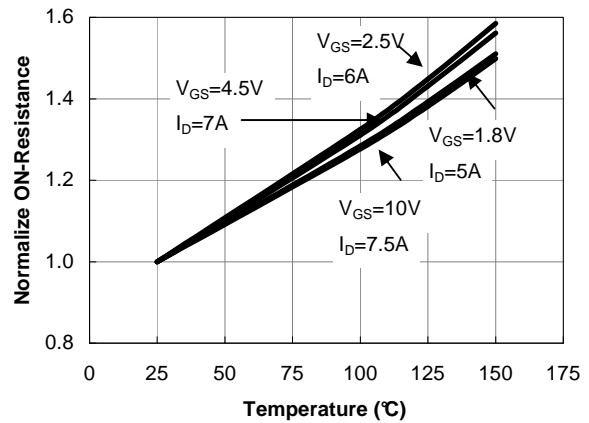


Figure 4: On-Resistance vs. Junction Temperature

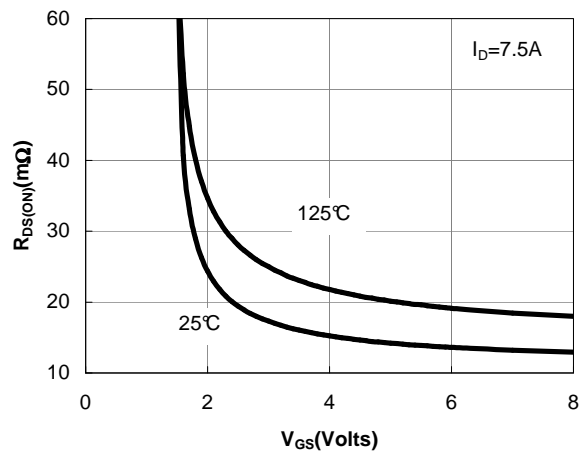


Figure 5: On-Resistance vs. Gate-Source Voltage

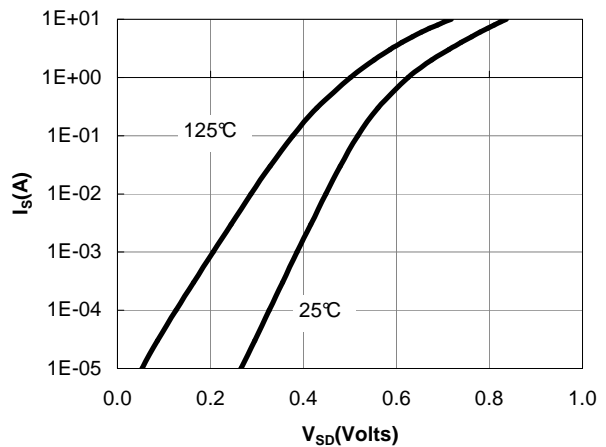


Figure 6: Body-Diode Characteristics

DUAL N-CHANNEL ENHANCEMENT MODE FET

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

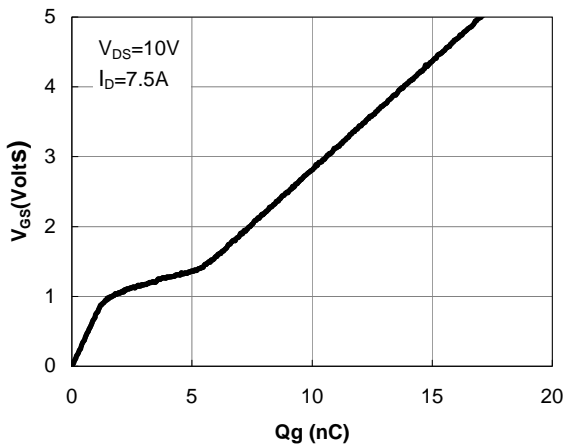


Figure 7: Gate-Charge Characteristics

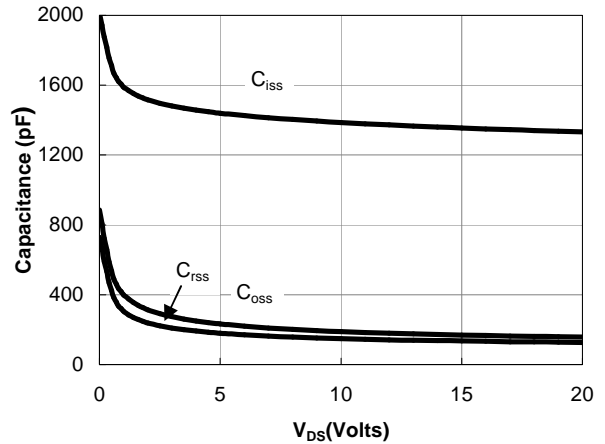


Figure 8: Capacitance Characteristics

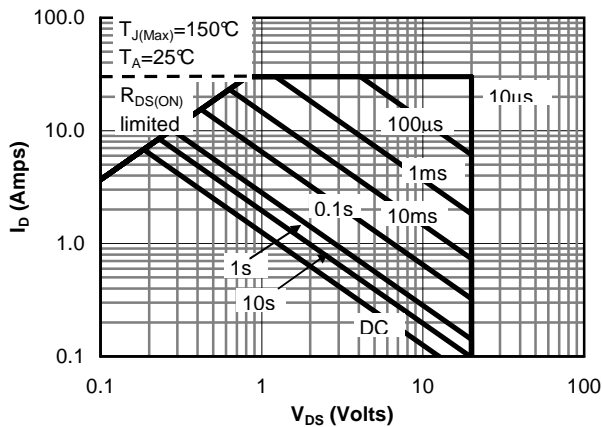


Figure 9: Maximum Forward Biased Safe Operating Area

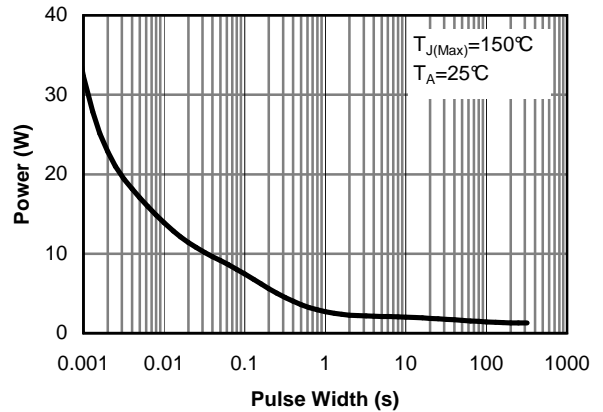


Figure 10: Single Pulse Power Rating Junction-to-Ambient

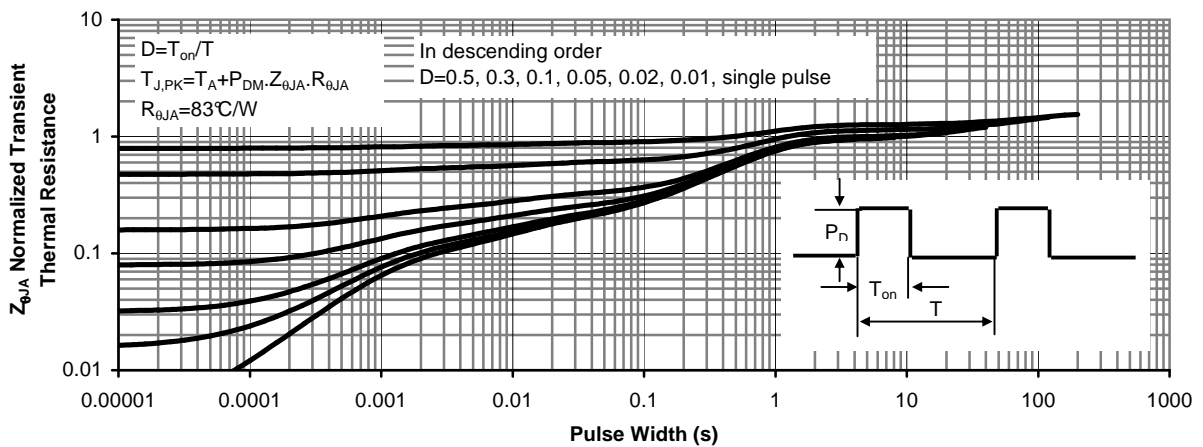
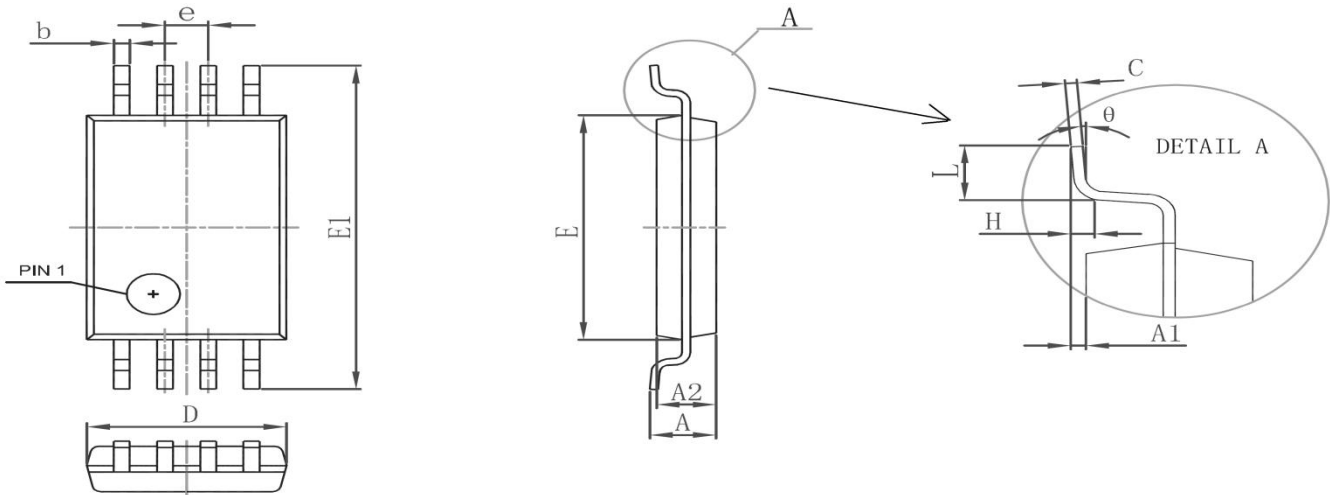


Figure 11: Normalized Maximum Transient Thermal Impedance

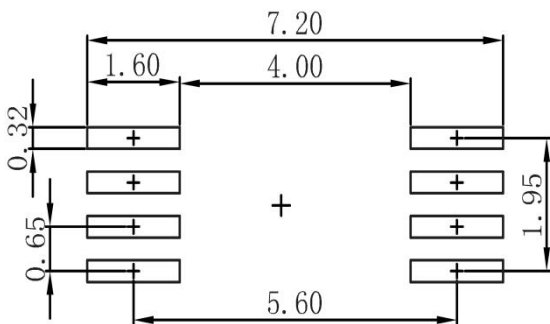
DUAL N-CHANNEL ENHANCEMENT MODE FET

SOP-8 Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| D | 2.900 | 3.100 | 0.114 | 0.122 |
| E | 4.300 | 4.500 | 0.169 | 0.177 |
| b | 0.190 | 0.300 | 0.007 | 0.012 |
| c | 0.090 | 0.200 | 0.004 | 0.008 |
| E1 | 6.250 | 6.550 | 0.246 | 0.258 |
| A | | 1.200 | | 0.047 |
| A2 | 0.800 | 1.000 | 0.031 | 0.039 |
| A1 | 0.050 | 0.150 | 0.002 | 0.006 |
| e | 0.65(BSC) | | 0.026(BSC) | |
| L | 0.500 | 0.700 | 0.020 | 0.028 |
| H | 0.25(TYP) | | 0.01(TYP) | |
| θ | 1° | 7° | 1° | 7° |

SOP-8 Suggested Pad Layout



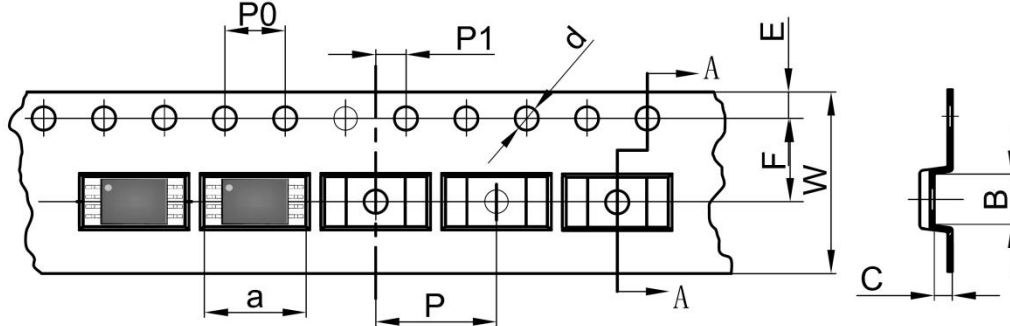
Note:

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

DUAL N-CHANNEL ENHANCEMENT MODE FET

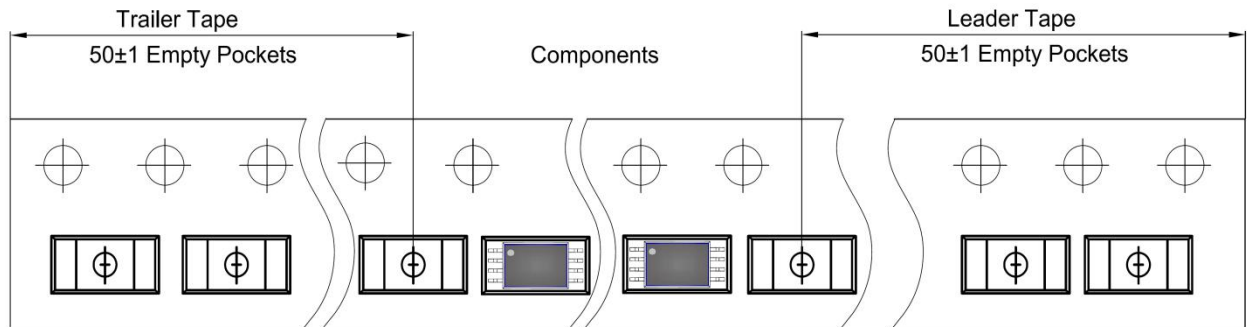
SOP-8 Tape and Reel

SOP-8 Embossed Carrier Tape

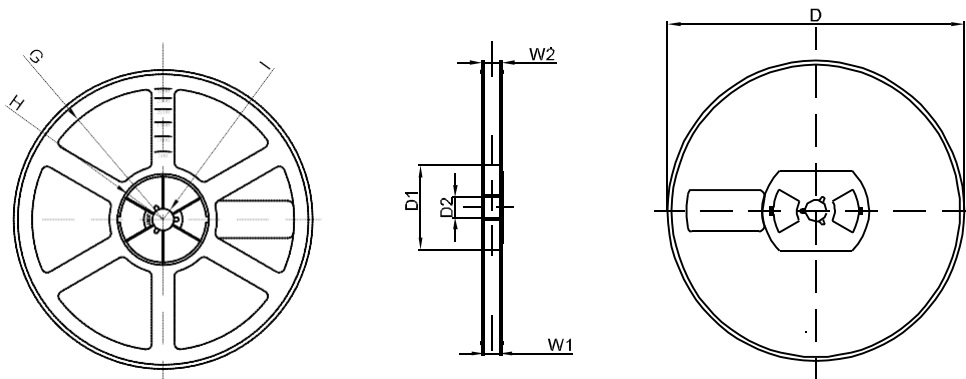


| DIMENSIONS ARE IN MILLIMETER | | | | | | | | | | |
|------------------------------|------|------|------|-------|------|------|------|------|------|-------|
| TYPE | a | B | C | d | E | F | P0 | P | P1 | W |
| SOP-8 | 6.76 | 3.30 | 1.20 | Ø1.50 | 1.75 | 5.50 | 4.00 | 8.00 | 2.00 | 12.00 |
| TOLERANCE | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 |

SOP-8 Tape Leader and Trailer



SOP-8 Reel



| DIMENSIONS ARE IN MILLIMETER | | | | | | | | |
|------------------------------|---------|--------|-------|---------|--------|-------|-------|-------|
| REEL OPTION | D | D1 | D2 | G | H | I | W1 | W2 |
| 13" DIA | Ø330.00 | 100.00 | 13.00 | R151.00 | R56.00 | R6.50 | 12.40 | 17.60 |
| TOLERANCE | ±2 | ±1 | ±1 | ±1 | ±1 | ±1 | ±1 | ±1 |