

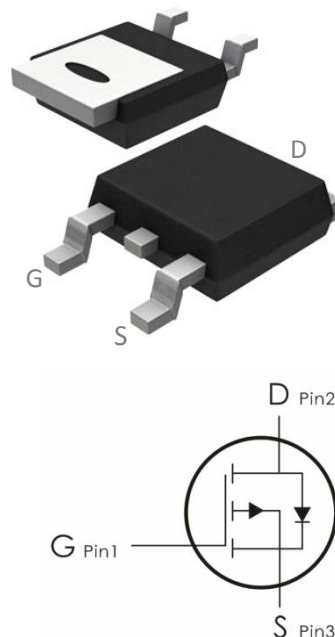
## Description:

This P-Channel MOSFET uses advanced trench technology and design to provide excellent  $R_{DS(on)}$  with low gate charge.

It can be used in a wide variety of applications.

## Features:

- 1)  $V_{DS}=-30V, I_D=-30A, R_{DS(on)}<25m\Omega @V_{GS}=-10V$  (Typ:  $19m\Omega$ )
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low  $R_{DS(on)}$ .
- 5) Excellent package for good heat dissipation.
- 6) MSL3



## Package Marking and Ordering Information:

| Part NO.       | Marking | Package | Packing       |
|----------------|---------|---------|---------------|
| STD26P3LLH6-DO | D26P3   | TO- 252 | 2500 pcs/Reel |

## Absolute Maximum Ratings: ( $T_C=25^{\circ}C$ unless otherwise noted)

| Symbol         | Parameter                                                 | Ratings     | Units       |
|----------------|-----------------------------------------------------------|-------------|-------------|
| $V_{DS}$       | Drain-Source Voltage                                      | -30         | V           |
| $V_{GS}$       | Gate-Source Voltage                                       | $\pm 20$    | V           |
| $I_D$          | Continuous Drain Current- $T_C=25^{\circ}C$ <sup>1</sup>  | -30         | A           |
|                | Continuous Drain Current- $T_C=100^{\circ}C$ <sup>1</sup> | -21         | A           |
| $I_{DM}$       | Pulsed Drain Current <sup>2</sup>                         | -120        | A           |
| $P_D$          | Total Power Dissipation                                   | 31.3        | W           |
| $E_{AS}$       | Single Pulsed Avalanche Energy <sup>3</sup>               | 45          | mJ          |
| $T_J, T_{STG}$ | Operating and Storage Junction Temperature Range          | -55 to +150 | $^{\circ}C$ |

## Thermal Characteristics:

| Symbol          | Parameter                            | Max | Units         |
|-----------------|--------------------------------------|-----|---------------|
| $R_{\theta JA}$ | Thermal Resistance, Junction-Ambient | 62  | $^{\circ}C/W$ |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 4   | $^{\circ}C/W$ |

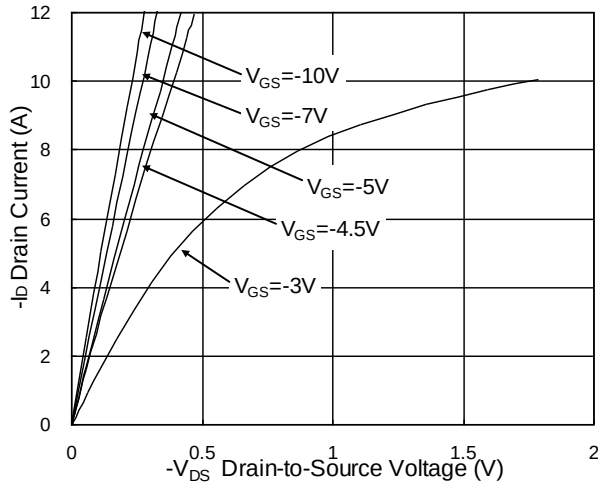
## Electrical Characteristics: ( $T_C=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol                             | Parameter                                      | Conditions                                                                                                         | Min  | Typ  | Max   | Units |
|------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------|------|-------|-------|
| Off Characteristics                |                                                |                                                                                                                    |      |      |       |       |
| BV <sub>DSS</sub>                  | Drain-Source Breakdown Voltage                 | V <sub>GS</sub> =0V, I <sub>D</sub> =-250 μ A                                                                      | -30  | ---  | ---   | V     |
| I <sub>DSS</sub>                   | Zero Gate Voltage Drain Current                | V <sub>GS</sub> =0V, V <sub>DS</sub> =-30V                                                                         | ---  | ---  | -1    | μ A   |
| I <sub>GSS</sub>                   | Gate-Source Leakage Current                    | V <sub>GS</sub> =± 20V, V <sub>DS</sub> =0A                                                                        | ---  | ---  | ± 100 | nA    |
| On Characteristics                 |                                                |                                                                                                                    |      |      |       |       |
| V <sub>GS(th)</sub>                | Gate-Source Threshold Voltage                  | V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =-250 μ A                                                        | -1.0 | -1.5 | -2.5  | V     |
| R <sub>DS(ON)</sub>                | Static Drain-Source On-Resistance <sup>4</sup> | V <sub>GS</sub> =-10V, I <sub>D</sub> =-10A                                                                        | ---  | 19   | 25    | m Ω   |
|                                    |                                                | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5A                                                                        | ---  | 27   | 40    |       |
|                                    |                                                | Dynamic Characteristics                                                                                            |      |      |       |       |
| C <sub>iss</sub>                   | Input Capacitance                              | V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHz                                                                 | ---  | 1200 | ---   | pF    |
| C <sub>oss</sub>                   | Output Capacitance                             |                                                                                                                    | ---  | 150  | ---   |       |
| C <sub>rss</sub>                   | Reverse Transfer Capacitance                   |                                                                                                                    | ---  | 135  | ---   |       |
| Switching Characteristics          |                                                |                                                                                                                    |      |      |       |       |
| t <sub>d(on)</sub>                 | Turn-On Delay Time                             | V <sub>DD</sub> =-15V, I <sub>D</sub> =-1A,<br>V <sub>GS</sub> =-10V, R <sub>GEN</sub> =6 Ω , R <sub>D</sub> =15 Ω | ---  | 13   | ---   | ns    |
| t <sub>r</sub>                     | Rise Time                                      |                                                                                                                    | ---  | 15   | ---   | ns    |
| t <sub>d(off)</sub>                | Turn-Off Delay Time                            |                                                                                                                    | ---  | 198  | ---   | ns    |
| t <sub>f</sub>                     | Fall Time                                      |                                                                                                                    | ---  | 98   | ---   | ns    |
| Q <sub>g</sub>                     | Total Gate Charge                              | V <sub>GS</sub> =-10V, V <sub>DS</sub> =-15V,<br>I <sub>D</sub> =-8A                                               | ---  | 50   | ---   | nC    |
| Q <sub>gs</sub>                    | Gate-Source Charge                             |                                                                                                                    | ---  | 9.8  | ---   | nC    |
| Q <sub>gd</sub>                    | Gate-Drain “Miller” Charge                     |                                                                                                                    | ---  | 8.3  | ---   | nC    |
| Drain-Source Diode Characteristics |                                                |                                                                                                                    |      |      |       |       |
| V <sub>SD</sub>                    | Drain Diode Forward Voltage                    | V <sub>GS</sub> =0V, I <sub>S</sub> =-12A                                                                          | ---  | ---  | -1.2  | V     |
| I <sub>S</sub>                     | Continuous Source Current                      | V <sub>G</sub> =V <sub>D</sub> =0V                                                                                 | ---  | ---  | -30   | A     |
| I <sub>SM</sub>                    | Pulsed Source Current                          |                                                                                                                    | ---  | ---  | -120  | A     |
| T <sub>rr</sub>                    | Reverse Recovery Time                          | T <sub>J</sub> =25 °C ,                                                                                            | ---  | 37   | ---   | ns    |
| Q <sub>rr</sub>                    | Reverse Recovery Charge                        | I <sub>F</sub> =-2A, di/dt=-100A/ μ s                                                                              | ---  | 36   | ---   | nC    |

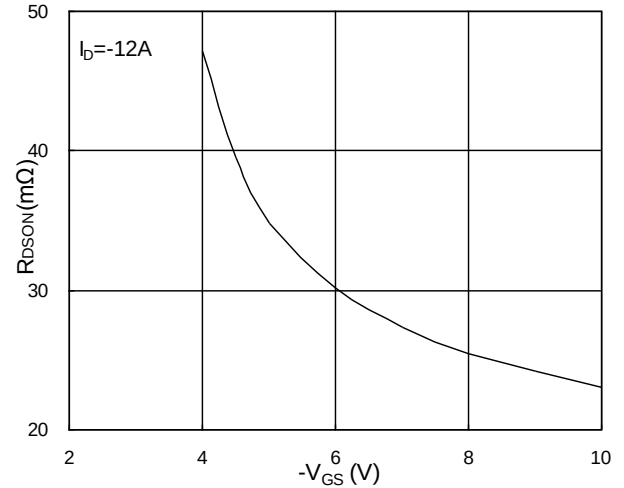
## Notes:

1. Computed continuous current assumes the condition of  $T_{j,Max}$  while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition :  $T_J=25^{\circ}C, V_{DD}=-15V, V_G=-10V, L=0.5mH$
4. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 0.5\%$

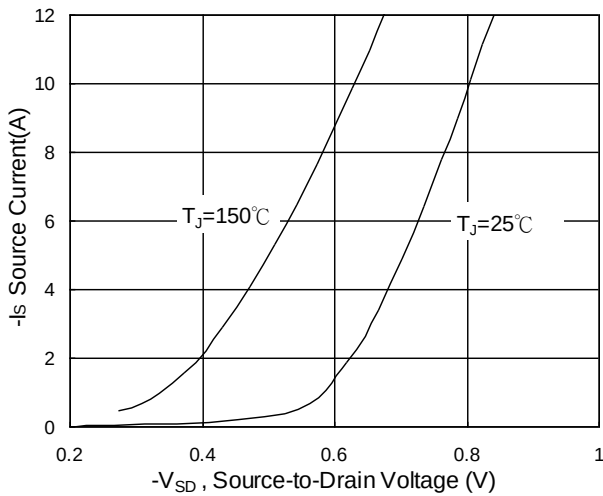
## Typical Characteristics: ( $T_C=25^{\circ}C$ unless otherwise noted)



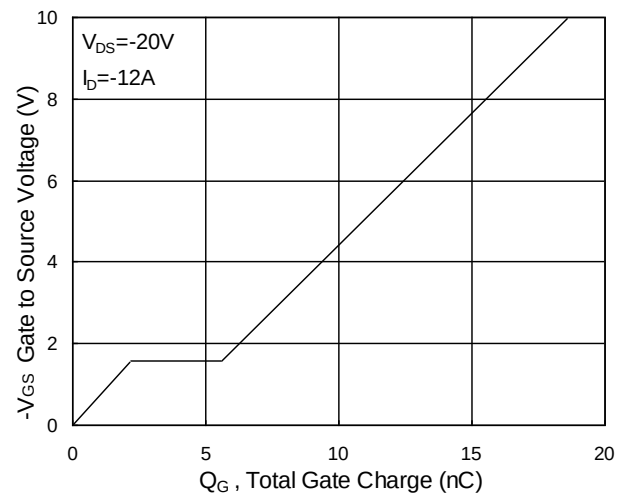
**Fig.1 Typical Output Characteristics**



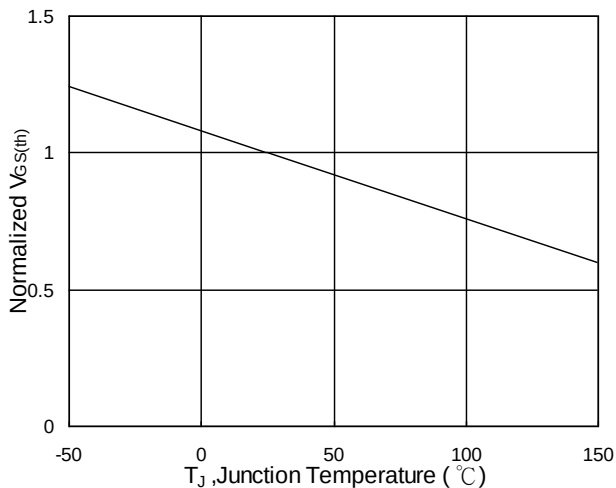
**Fig.2 On-Resistance v.s Gate-Source**



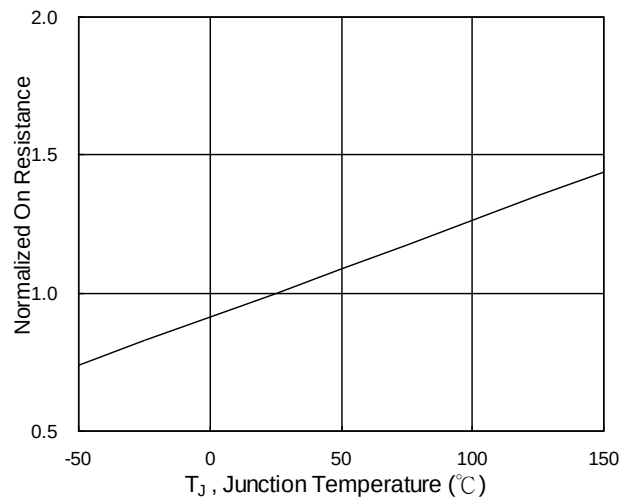
**Fig.3 Forward Characteristics of Reverse**



**Fig.4 Gate-Charge Characteristics**

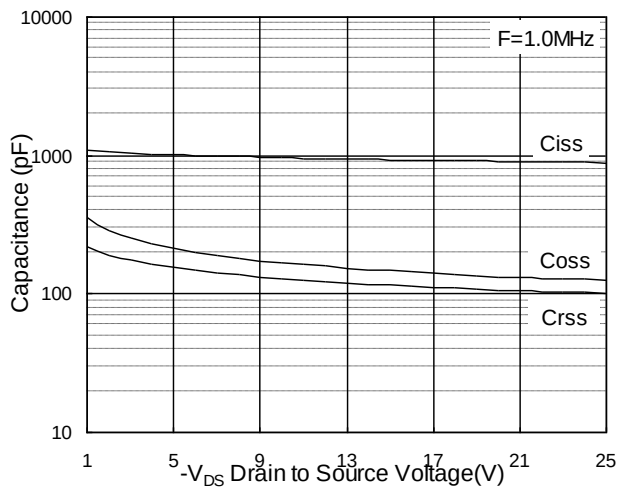


**Fig.5 Normalized  $V_{GS(th)}$  v.s  $T_J$**

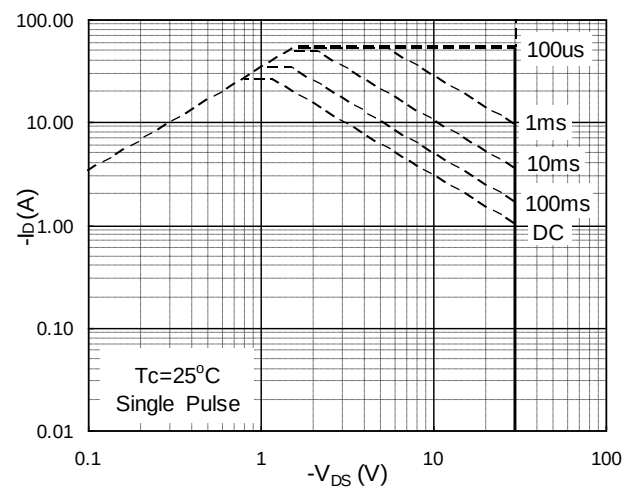


**Fig.6 Normalized  $R_{DS(on)}$  v.s  $T_J$**

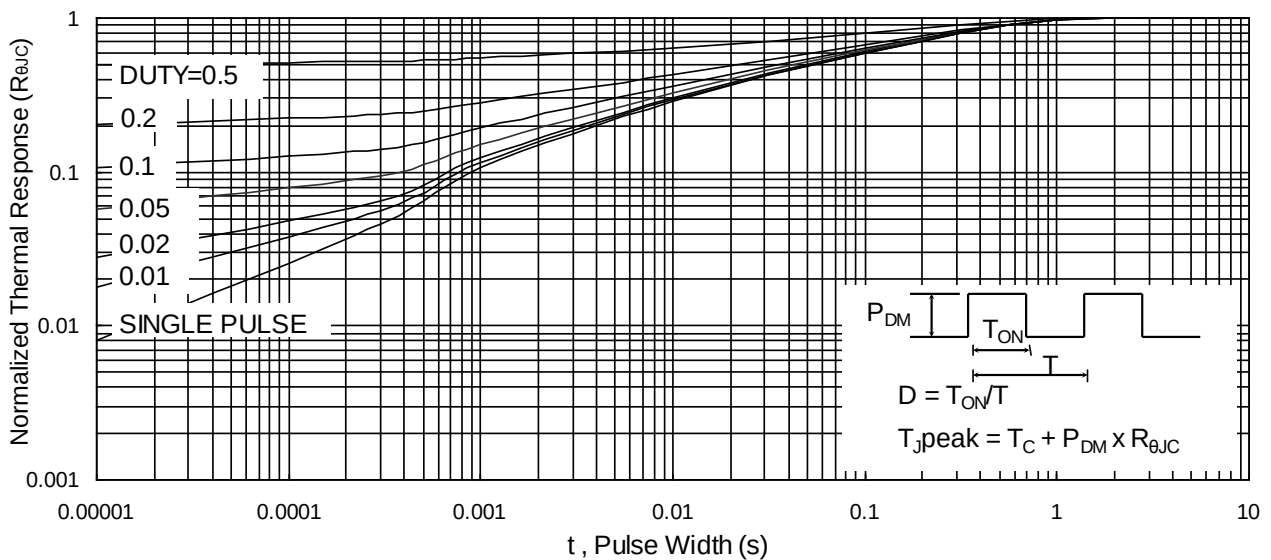
V2.0



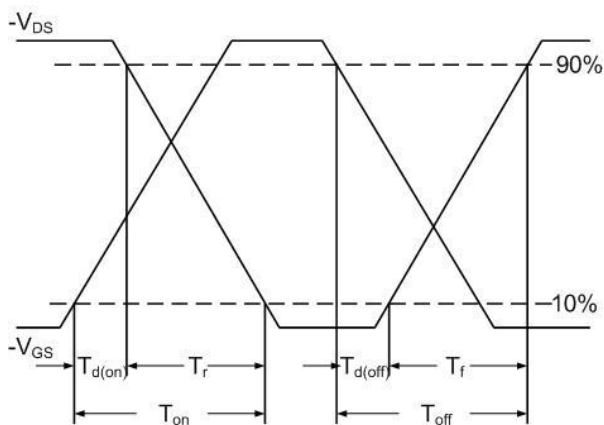
**Fig.7 Capacitance**



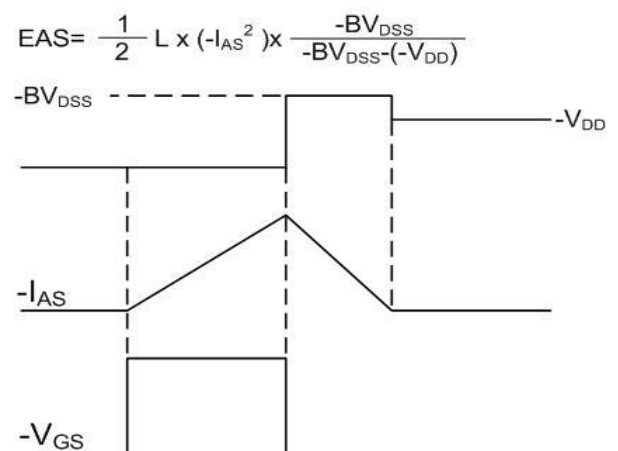
**Fig.8 Safe Operating Area**



**Fig.9 Normalized Maximum Transient Thermal Impedance**



**Fig.10 Switching Time Waveform**

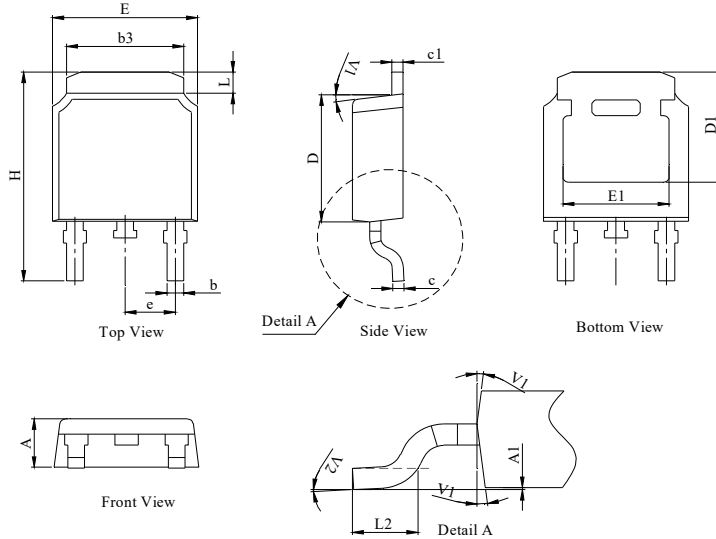


**Fig.11 Unclamped Inductive Switching Waveform**

## TO-252 Package Information

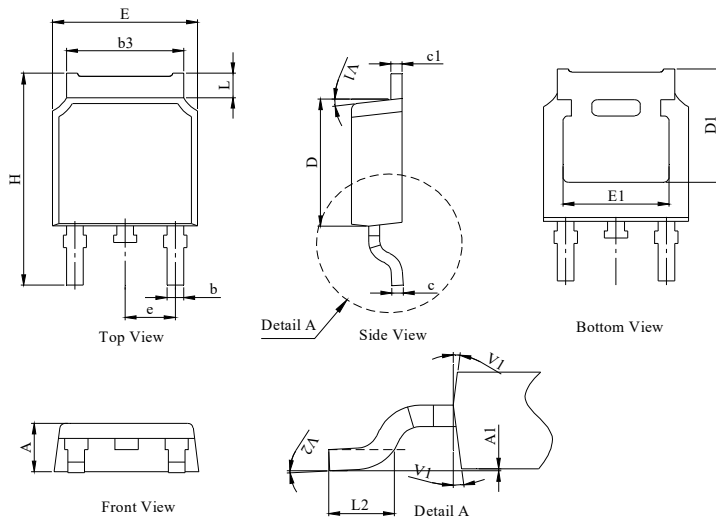
### Package Outline Type-A

UNIT: mm



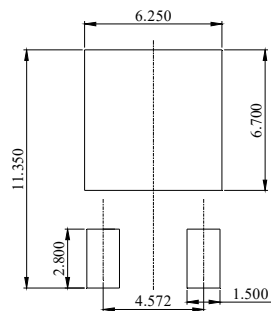
| DIM. | MILLIMETER |       |       |
|------|------------|-------|-------|
|      | MIN.       | NOM.  | MAX.  |
| A    | 2.18       | 2.30  | 2.39  |
| A1   | 0          | --    | 0.13  |
| b    | 0.64       | 0.76  | 0.89  |
| c    | 0.40       | 0.50  | 0.61  |
| c1   | 0.46       | 0.50  | 0.58  |
| D    | 5.97       | 6.10  | 6.23  |
| D1   | 5.05       | --    | --    |
| E    | 6.35       | 6.60  | 6.73  |
| E1   | 4.32       | --    | --    |
| b3   | 5.21       | 5.38  | 5.55  |
| e    | 2.29 BSC   |       |       |
| H    | 9.40       | 10.00 | 10.40 |
| L    | 0.89       | --    | 1.27  |
| L2   | 1.40       | --    | 1.78  |
| V1   | 7° REF     |       |       |
| V2   | 0°         | --    | 6°    |

### Package Outline Type-B



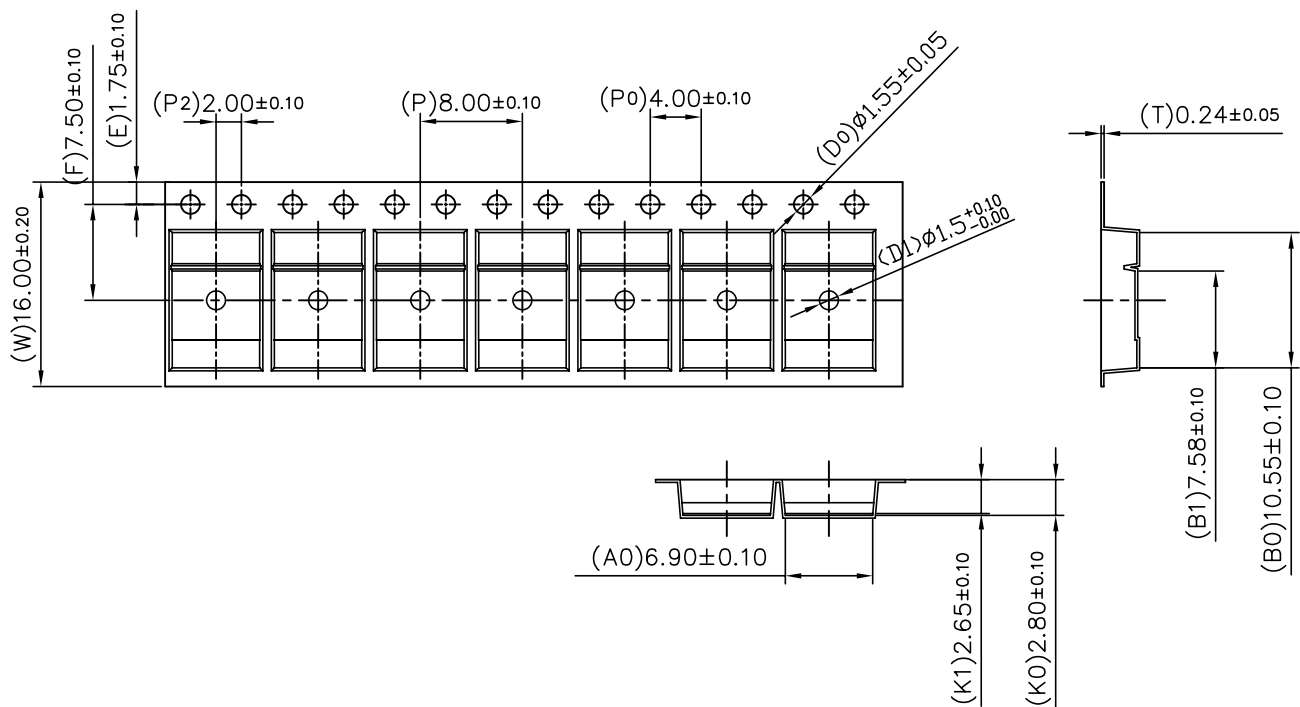
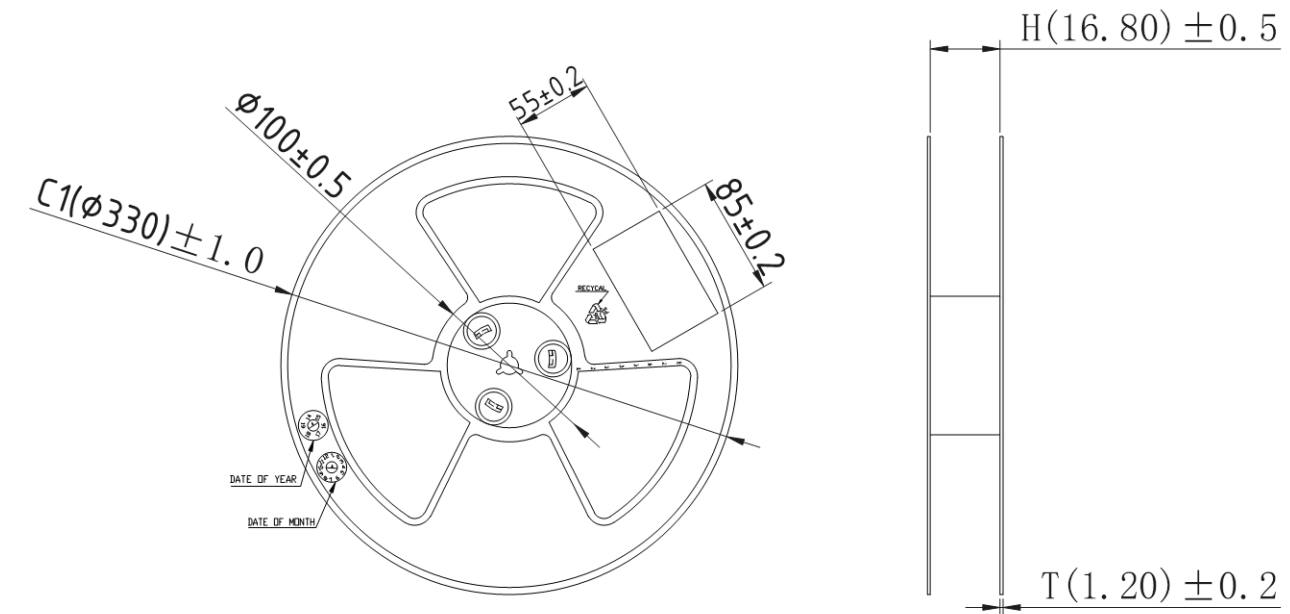
| DIM. | MILLIMETER |       |       |
|------|------------|-------|-------|
|      | MIN.       | NOM.  | MAX.  |
| A    | 2.10       | 2.30  | 2.40  |
| A1   | 0          | --    | 0.13  |
| b    | 0.66       | 0.76  | 0.86  |
| b3   | 5.21       | 5.38  | 5.55  |
| c    | 0.40       | 0.50  | 0.60  |
| c1   | 0.44       | 0.50  | 0.58  |
| D    | 5.90       | 6.10  | 6.30  |
| D1   | 5.30REF    |       |       |
| E    | 6.40       | 6.60  | 6.80  |
| E1   | 4.63       | -     | -     |
| e    | 2.29 BSC   |       |       |
| H    | 9.50       | 10.00 | 10.70 |
| L    | 1.09       | --    | 1.21  |
| L2   | 1.35       | --    | 1.65  |
| V1   | 7° REF     |       |       |
| V2   | 0°         | --    | 6°    |

### Recommended Soldering Footprint



## Tape & Reel Information

Dimensions in mm



Pulling direction →

## Marking Information:

①. Doingter LOGO

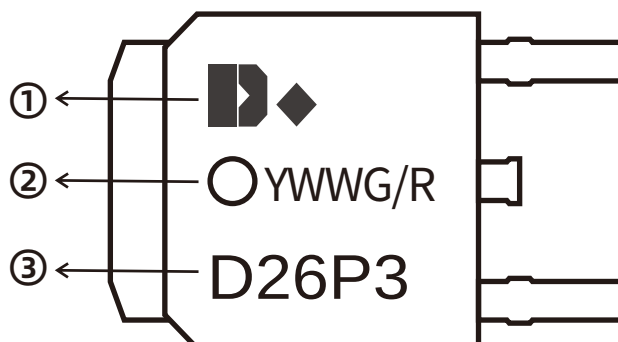
②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)

③. Part NO.



## Previous Version

| Version | Date       | Subjects (major changes since last revision) |
|---------|------------|----------------------------------------------|
| 2.0     | 2024-09-11 | Release of final version                     |

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