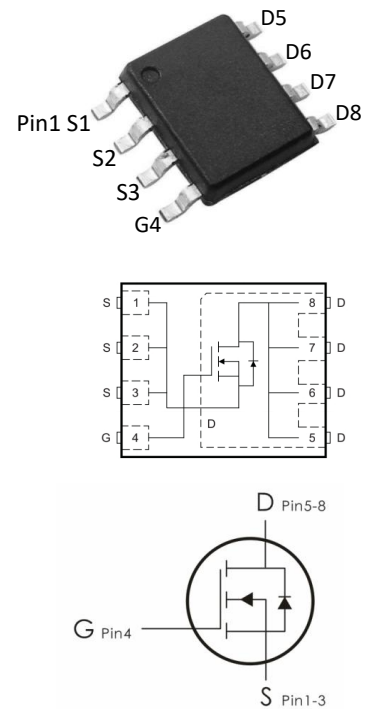


## Description:

This N-Channel MOSFET uses advanced SGT 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)  $V_{DS}=100V, I_D=11A, R_{DS(ON)} < 16m\ \Omega @ V_{GS}=10V$  (Typ:  $14m\ \Omega$ )
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density SGT 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
SH014TDG	H014TD	SOP-8	3000 pcs/Reel

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

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	100	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current <sup>1</sup>	11	A
	Continuous Drain Current- $T_A=100^\circ\text{C}$ <sup>1</sup>	7.7	
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	44	
$P_D$	Power Dissipation	2.8	W
$E_{AS}$	Single pulse avalanche energy <sup>3</sup>	60	mJ
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

## Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	45	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	100	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=100V$	---	---	1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1	1.7	2.5	V
$R_{DS(on)}$	Drain-Source On Resistance <sup>4</sup>	$V_{GS}=10V, I_D=10A$	---	14	16	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$	---	18	21	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	---	1100	---	pF
$C_{oss}$	Output Capacitance		---	312	--	
$C_{rss}$	Reverse Transfer Capacitance		---	6	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=50V, I_D=25A,$ $R_G=3\ \Omega, V_{GS}=10V$	---	7	---	ns
$t_r$	Rise Time		---	42	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	24	---	ns
$t_f$	Fall Time		---	9	---	ns
$Q_g$	Total Gate Charge		$V_{GS}=10V, V_{DS}=50V,$ $I_D=25A$	---	19	---
$Q_{gs}$	Gate-Source Charge	---		6.5	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge	---		3	---	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=20A$	---	---	1.2	V
$I_S$	Continuous Drain Current	$V_D=V_G=0V$	---	---	9.16	A
$I_{SM}$	Pulsed Drain Current		---	---	36.6	A
$T_{rr}$	Reverse Recovery Time	$I_F=25A, T_J=25^{\circ}\text{C}$	---	55	---	ns
$Q_{rr}$	Reverse Recovery Charge	$dI/dt=100A/\mu\text{s}$	---	64	---	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 :  $T_J=25^{\circ}C, V_{DD}=50V, V_G=10V, L=0.5mH$
4. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 0.5\%$

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

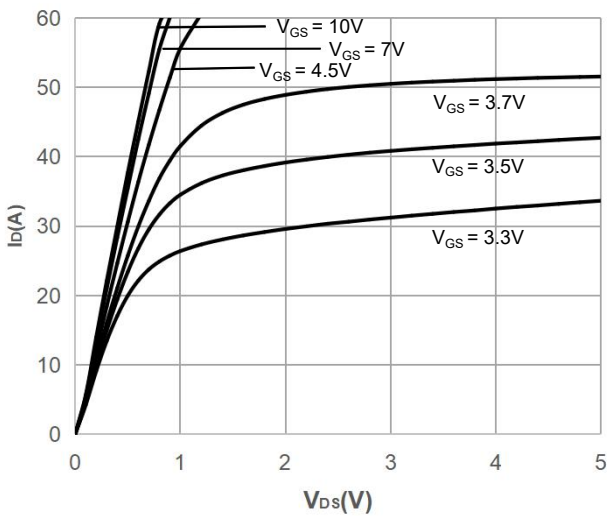


Figure 1: Output Characteristics

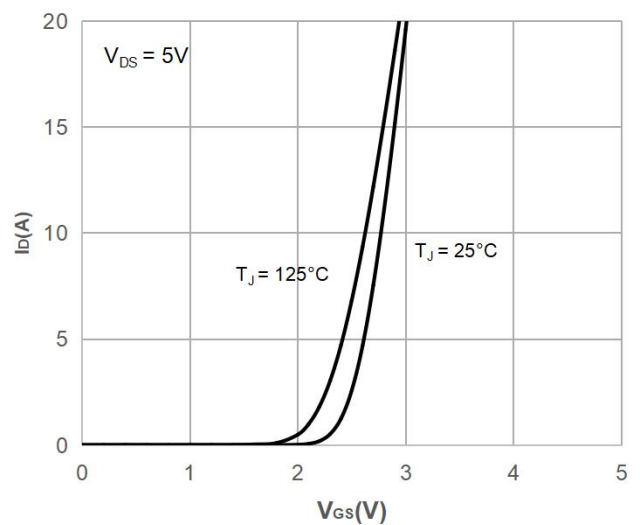


Figure 2: Typical Transfer Characteristics

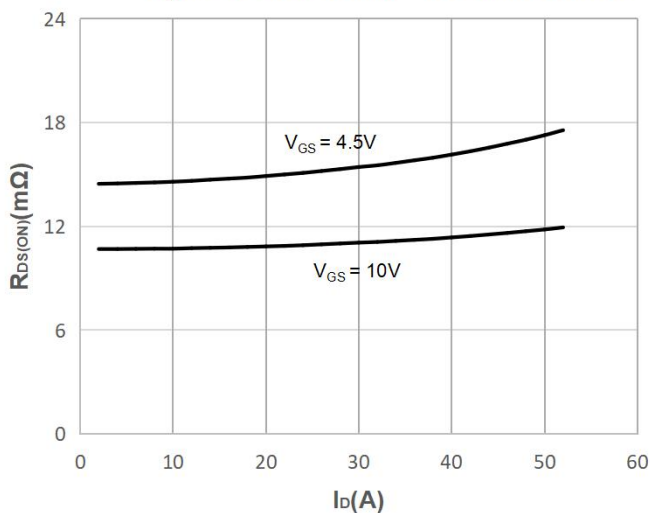


Figure 3: On-resistance vs. Drain Current

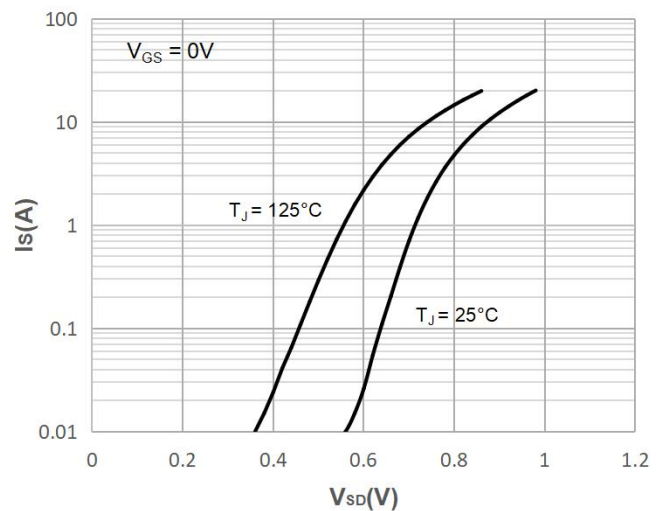
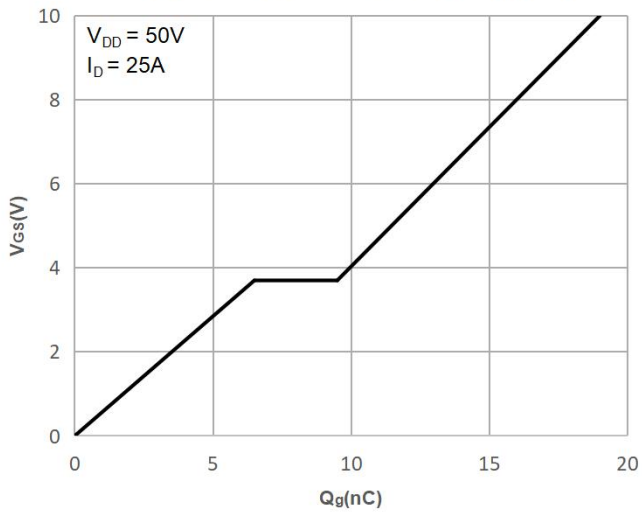
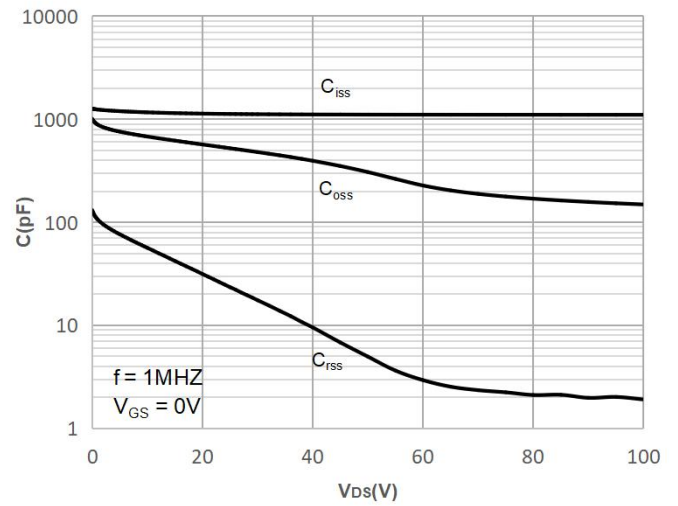


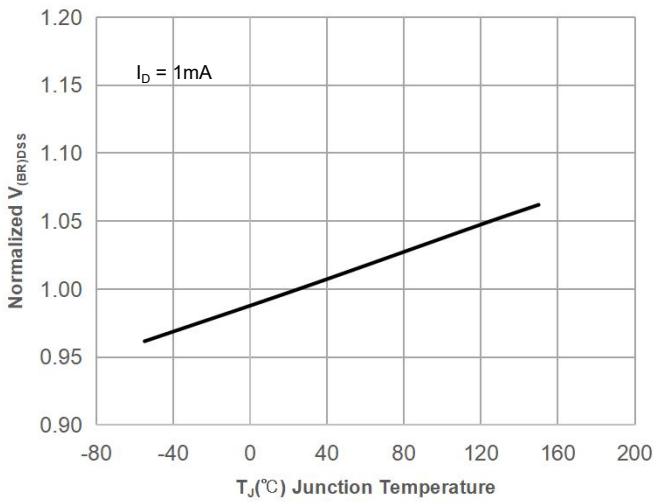
Figure 4: Body Diode Characteristics



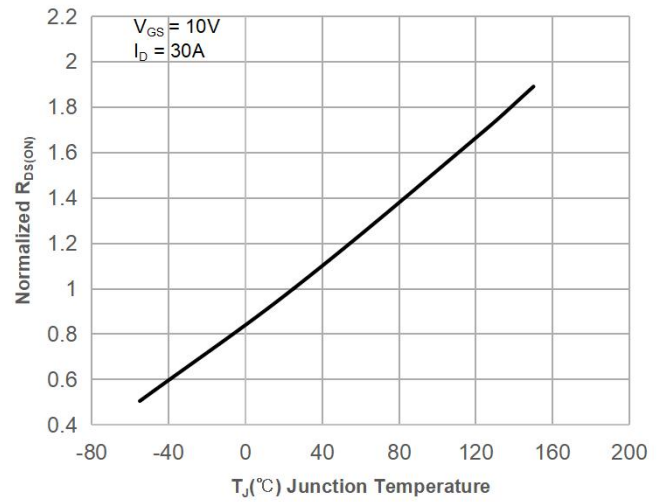
**Figure 5: Gate Charge Characteristics**



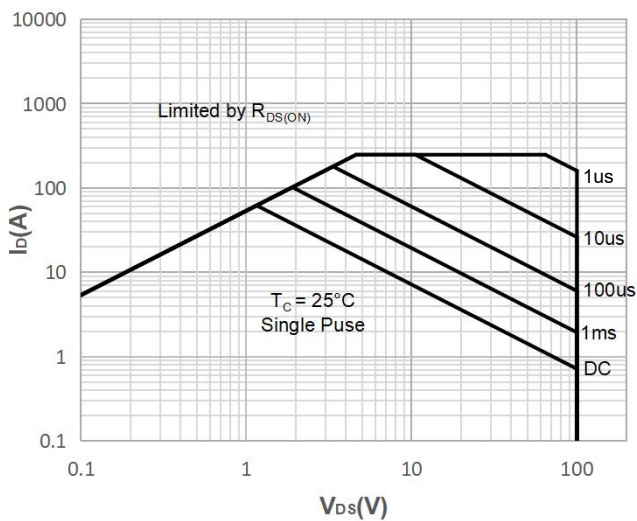
**Figure 6: Capacitance Characteristics**



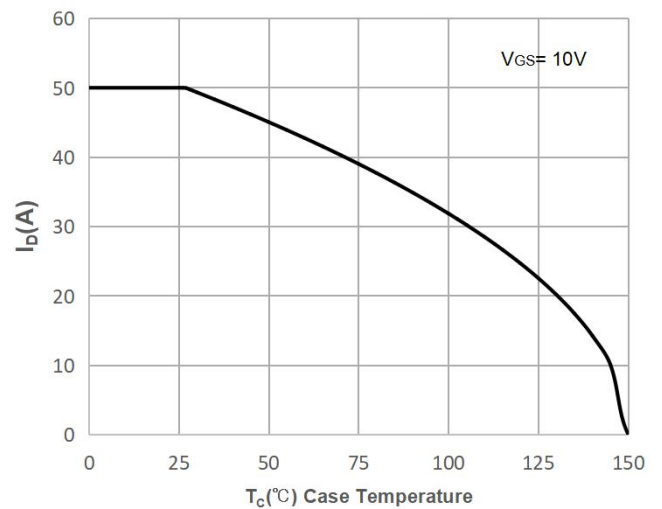
**Figure 7: Normalized Breakdown voltage vs. Junction Temperature**



**Figure 8: Normalized on Resistance vs. Junction Temperature**



**Figure 9: Maximum Safe Operating Area**



**Figure 10: Maximum Continuous Drian Current vs. Case Temperature**

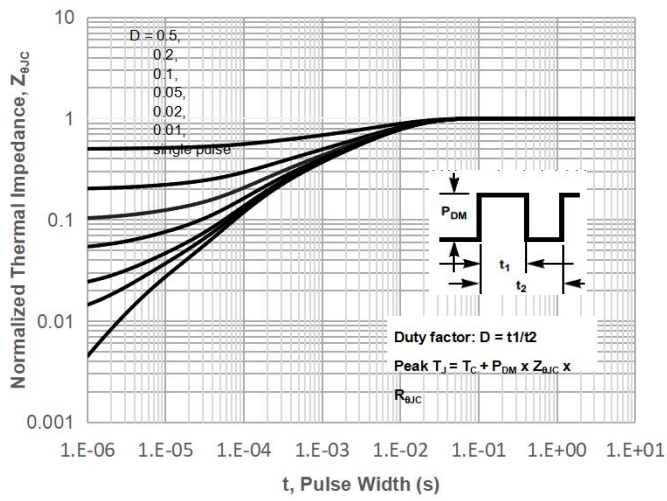


Figure 11: Normalized Maximum Transient Thermal Impedance

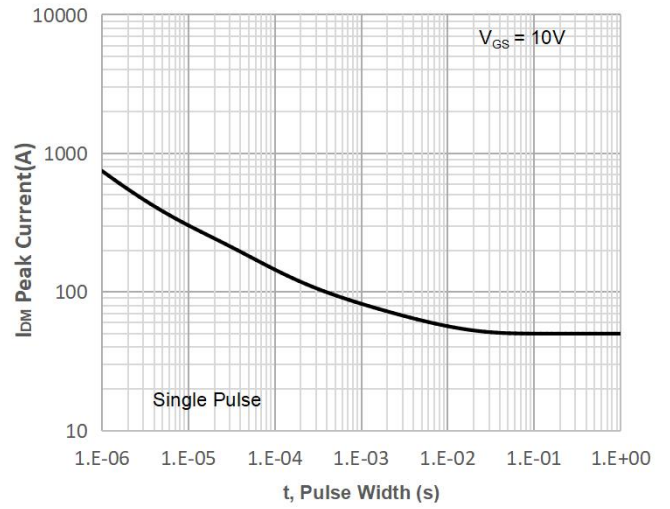
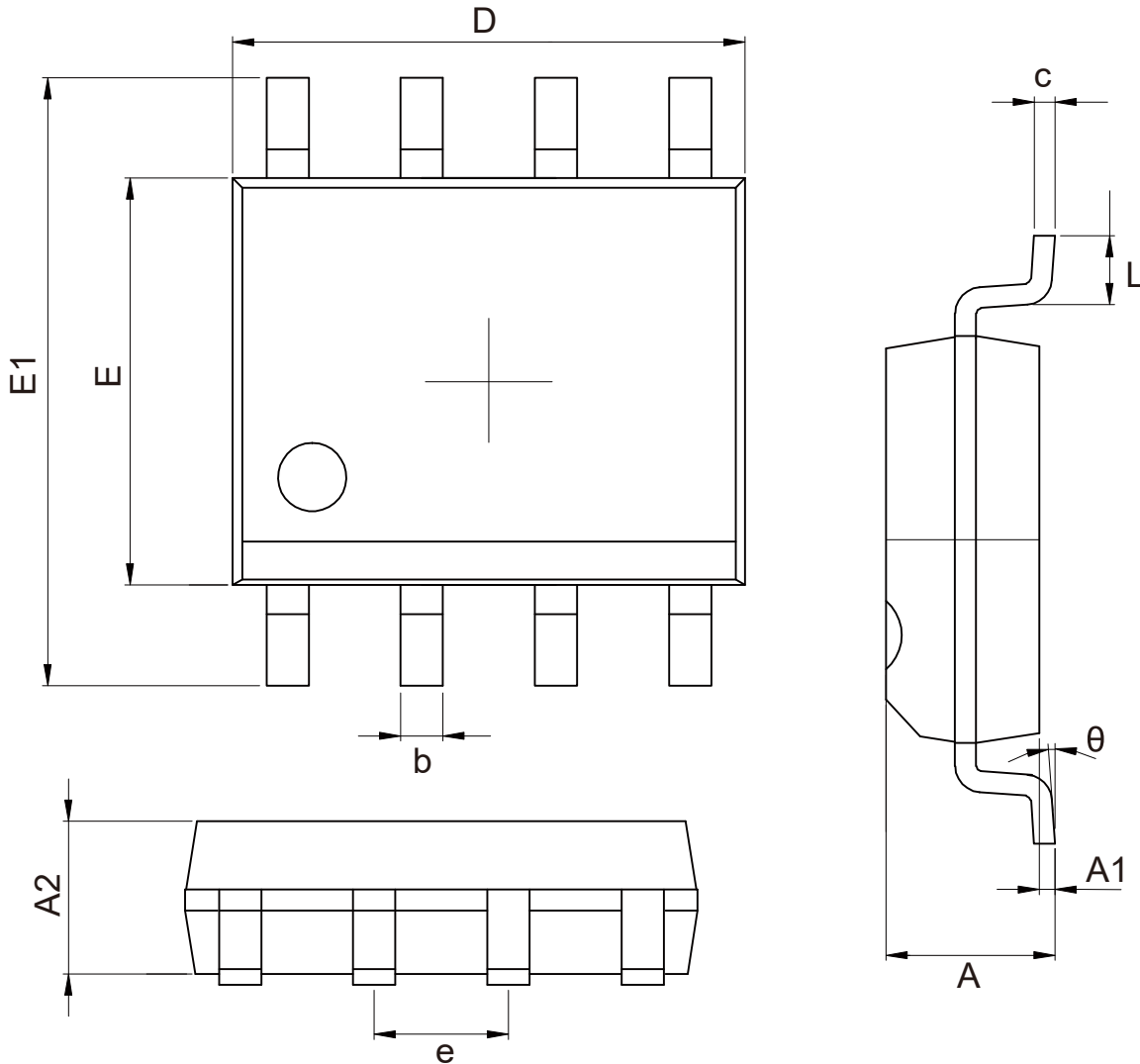


Figure 12: Peak Current Capacity

## SOP-8 Package Information:

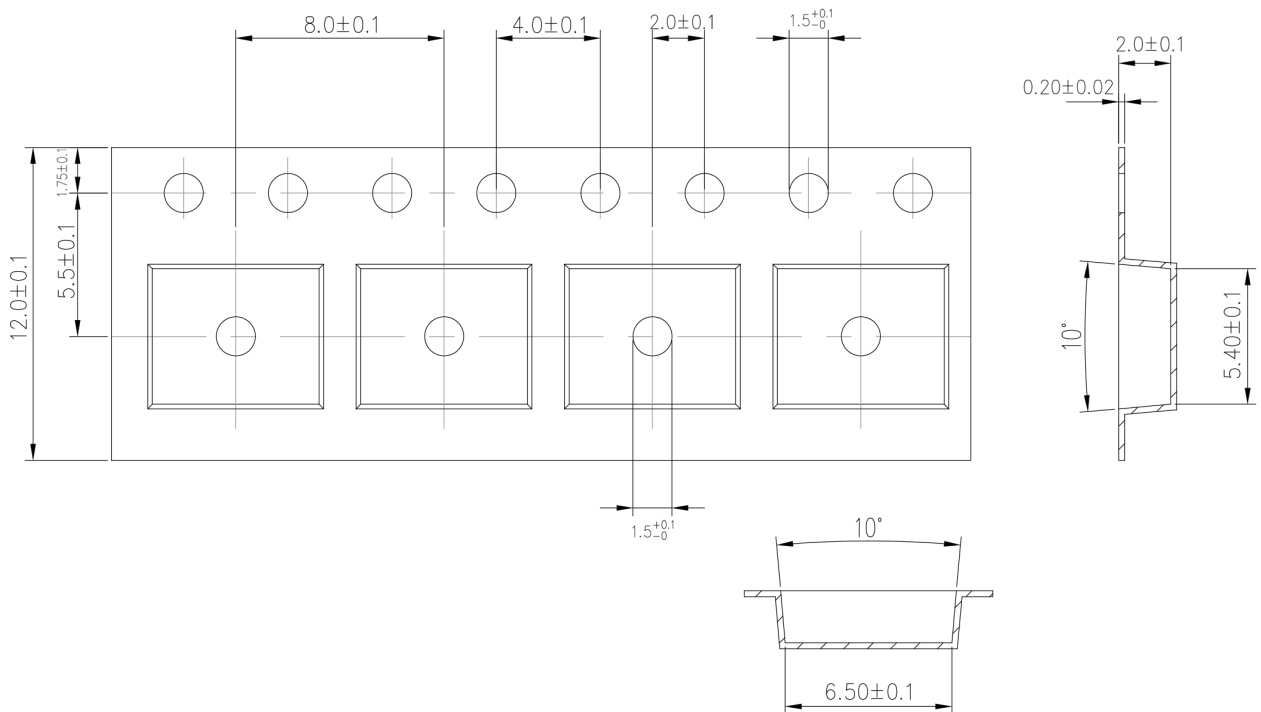
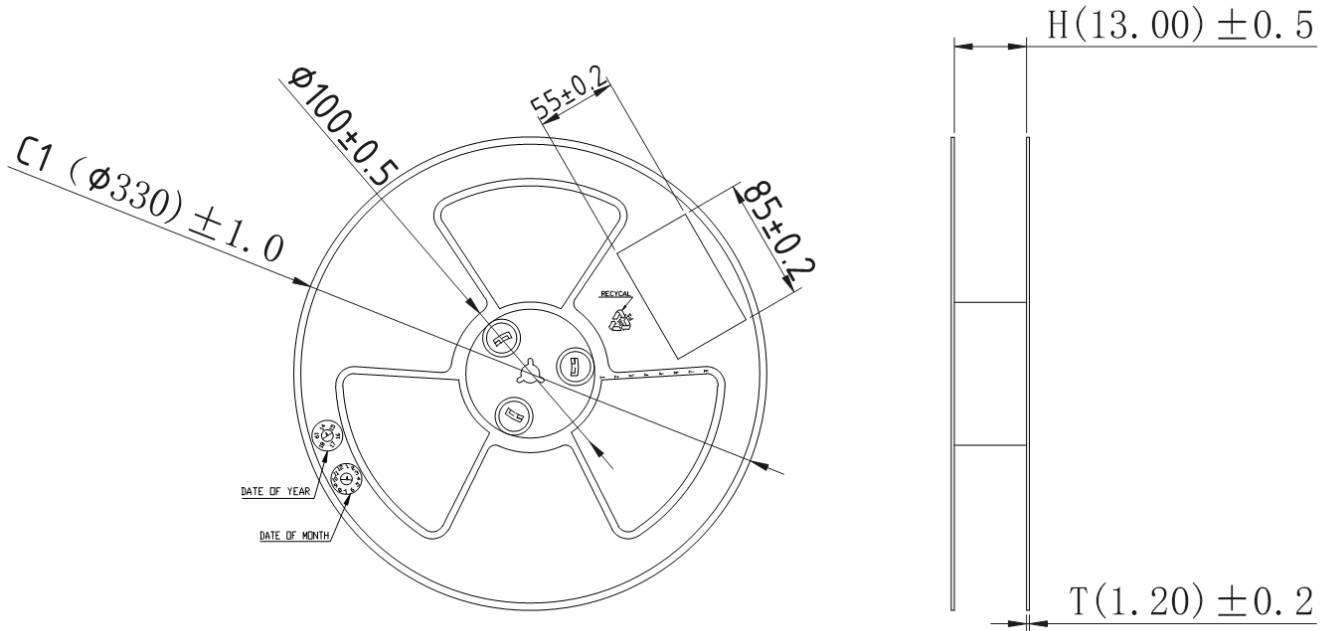


COMMON DIMENSIONS			
UNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	1.350	---	1.750
A1	0.100	---	0.250
A2	1.350	---	1.550
b	0.330	---	0.510
c	0.170	---	0.250
D	4.700	---	5.100
E	3.800	3.900	4.000
E1	5.800	---	6.200
e	1.270BSC		
L	0.400	---	1.270
$\theta$	0°	--	8°

Unit:mm

## Tape & Reel Information

Dimensions in mm



## Marking Information:

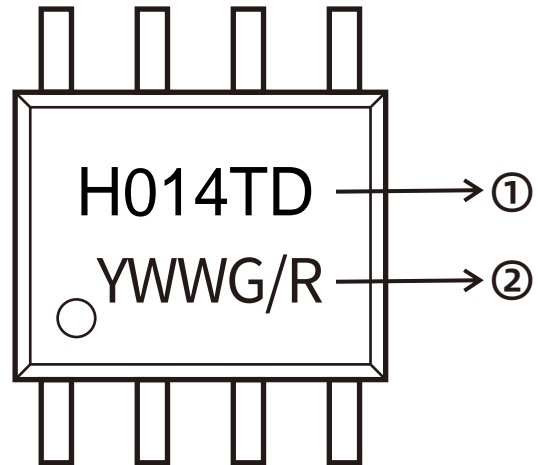
①. Part NO.

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)



## Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2025-12-25	Release of final version

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