



PJM40P40TE

P-Channel Enhancement Mode Power MOSFET

Product Summary

- $V_{DS} = -40V, I_D = -40A$
- $R_{DS(on)} < 12m\Omega @ V_{GS} = -10V$
- $R_{DS(on)} < 17m\Omega @ V_{GS} = -4.5V$

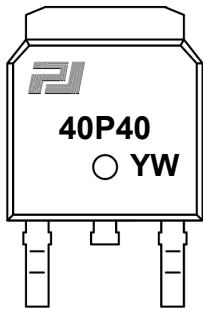
Features

- Advanced Trench Technology
- 100% Avalanche Tested
- RoHS Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

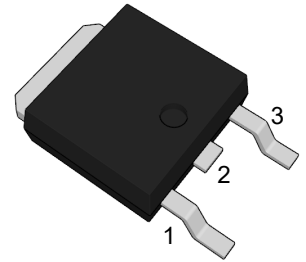
Application

- Load Switch
- PWM Application
- Power management

Marking Code



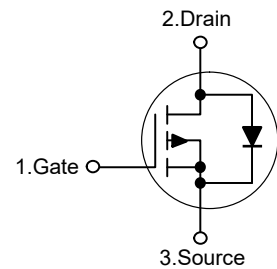
TO-252



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

Schematic Diagram



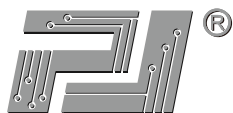
Absolute Maximum Ratings

Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	40	V
Gate-Source Voltage	$-V_{GS}$	± 20	V
Drain Current-Continuous	$-I_D$	40	A
Drain Current-Pulsed ^{Note1}	$-I_{DM}$	160	A
Maximum Power Dissipation	P_D	40	W
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	95	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.1	°C/W
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Electrical Characteristics

(T_J=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	-V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	40	--	--	V
Zero Gate Voltage Drain Current	-I _{DSS}	V _{DS} =-40V, V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage ^{Note3}	-V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	1	1.5	2.5	V
Drain-Source On-Resistance ^{Note3}	R _{DS(on)}	V _{GS} =-10V, I _D =-15A	--	9	12	mΩ
		V _{GS} =-4.5V, I _D =-10A	--	13	17	mΩ
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =-5V, I _D =-2A	--	9	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, f=1MHz	--	2053	--	pF
Output Capacitance	C _{oss}		--	258	--	pF
Reverse Transfer Capacitance	C _{rss}		--	212	--	pF
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	--	17	--	Ω
Total Gate Charge	Q _g	V _{DS} =-20V, I _D =-11A, V _{GS} =-10V	--	35	--	nC
Gate-Source Charge	Q _{gs}		--	6.2	--	nC
Gate-Drain Charge	Q _{gd}		--	7.3	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-20V, I _D =-11A, V _{GS} =-10V, R _{GEN} =2.5Ω	--	10	--	nS
Turn-on Rise Time	t _r		--	20	--	nS
Turn-off Delay Time	t _{d(off)}		--	51	--	nS
Turn-off Fall Time	t _f		--	28	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage	-V _{SD}	V _{GS} =0V, I _S =-30A	--	--	1.2	V
Diode Forward Current	-I _S		--	--	40	A

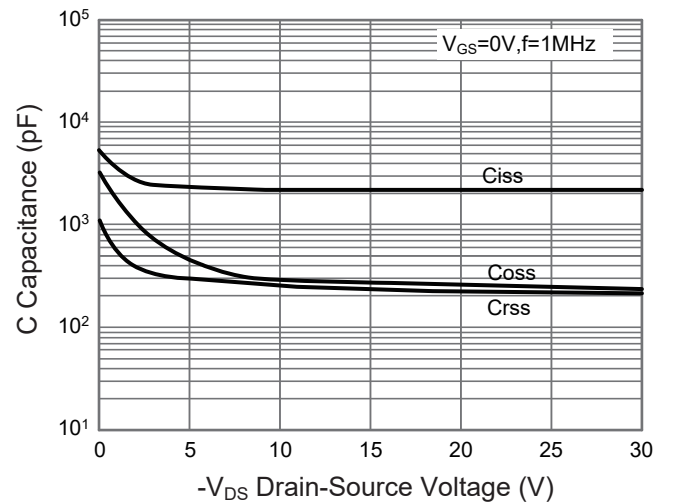
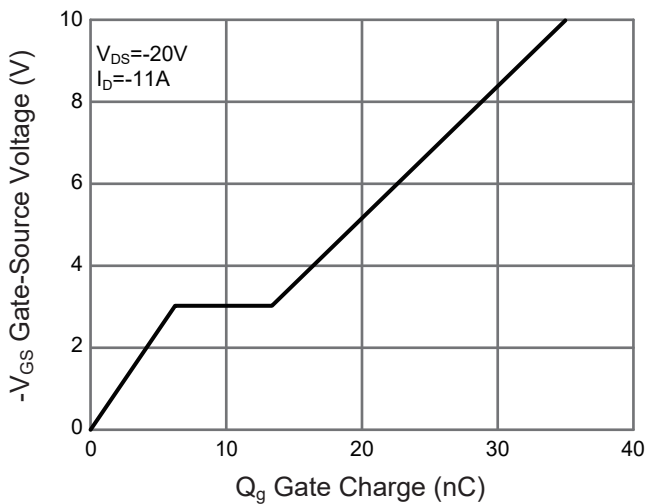
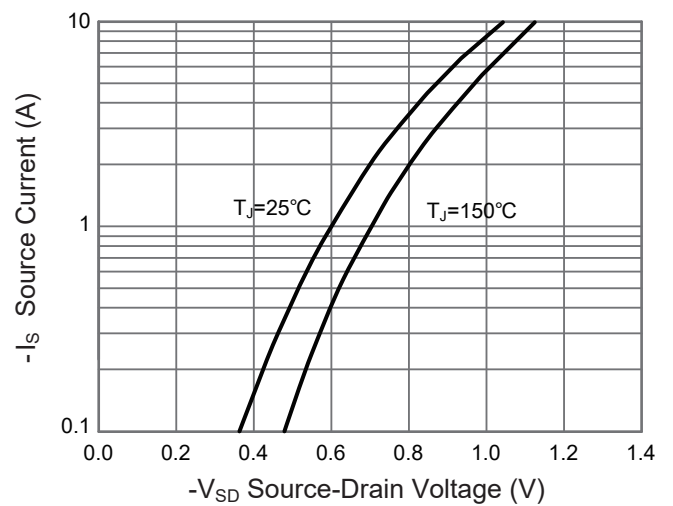
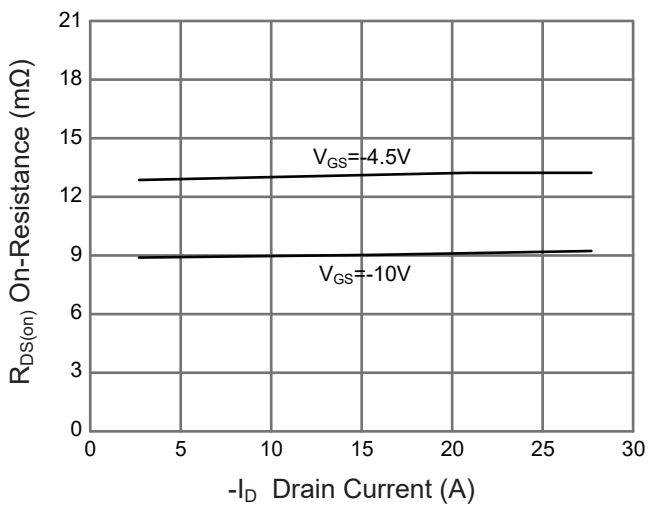
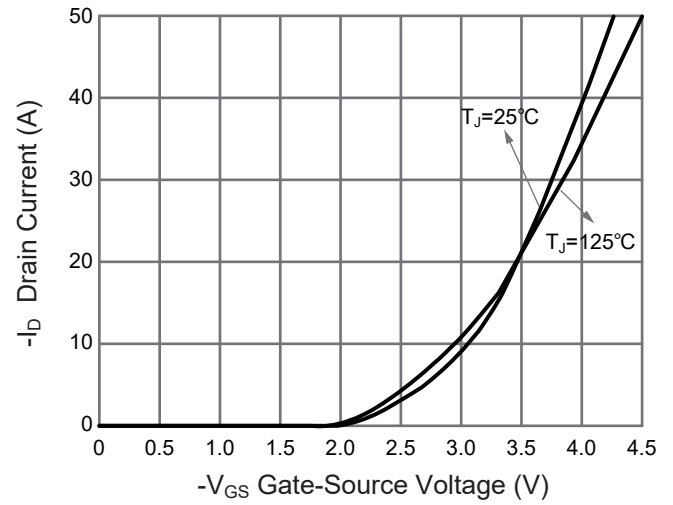
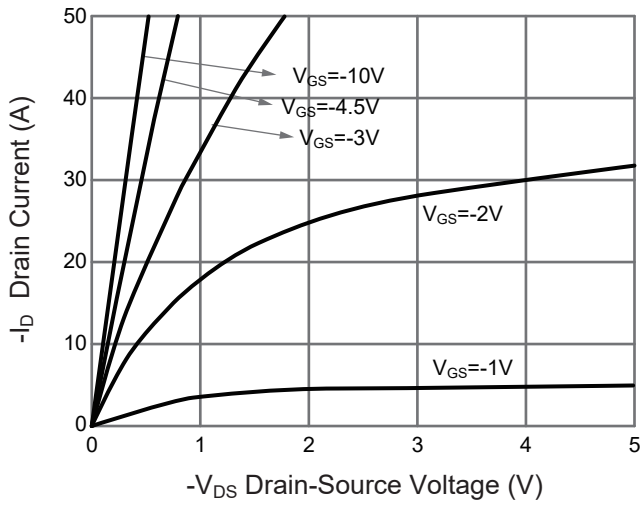
- Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition: T_J=25°C, V_{DD}=-20V, V_G=-10V, R_G=25Ω, L=0.5mH, I_{AS}=-19.5A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%



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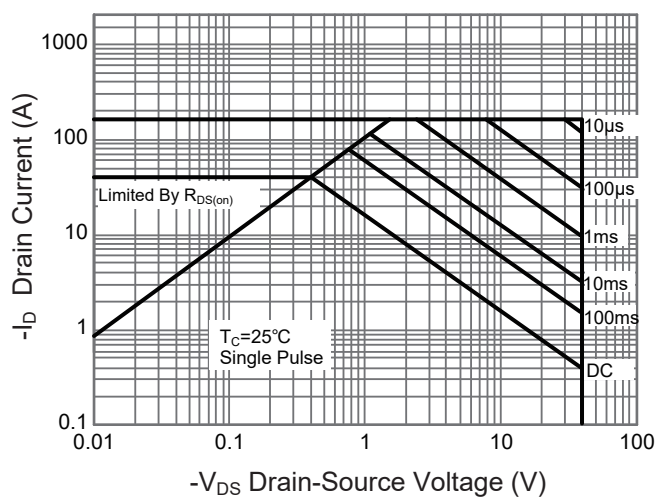
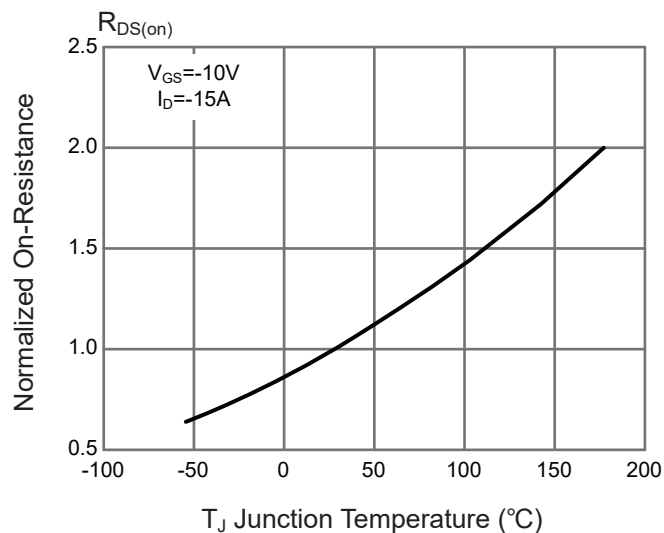
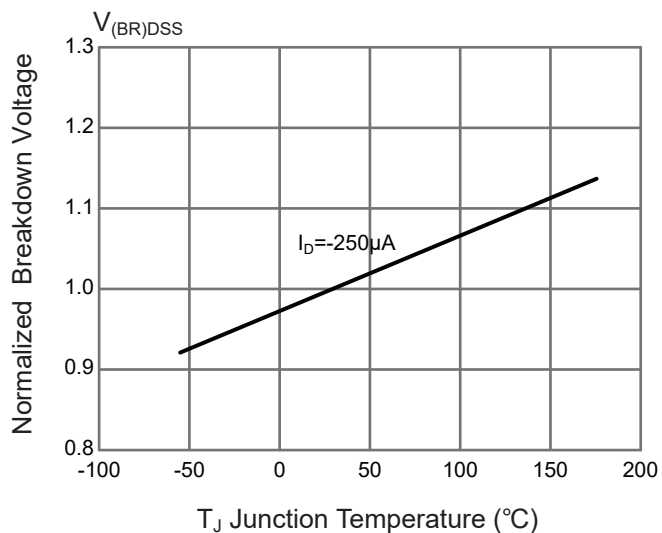
Typical Characteristic Curves





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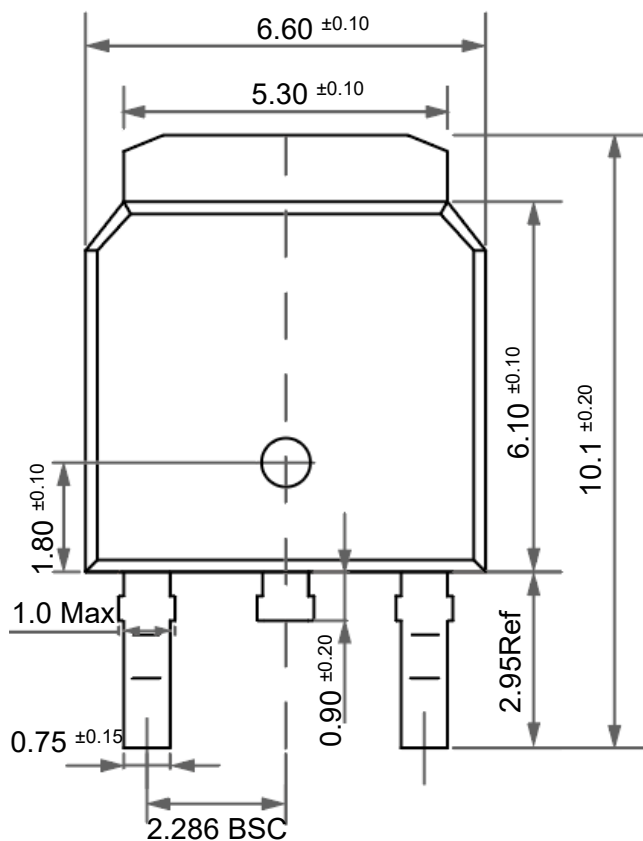
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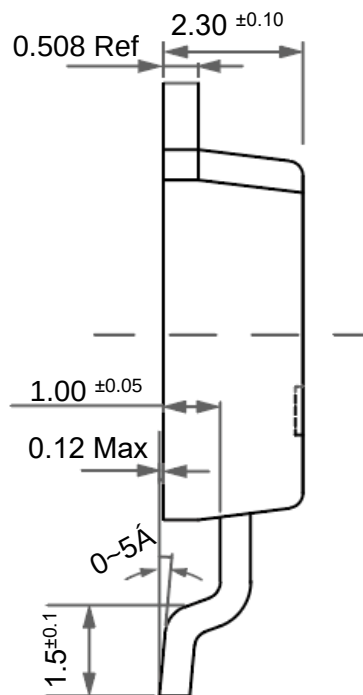
Package Outline

TO-252

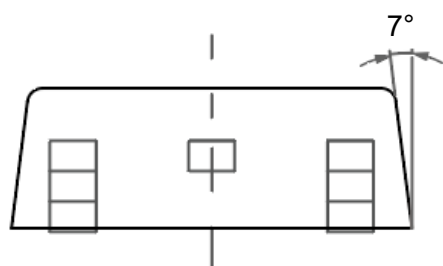
Dimensions in mm



Front View



Side View



Bottom View

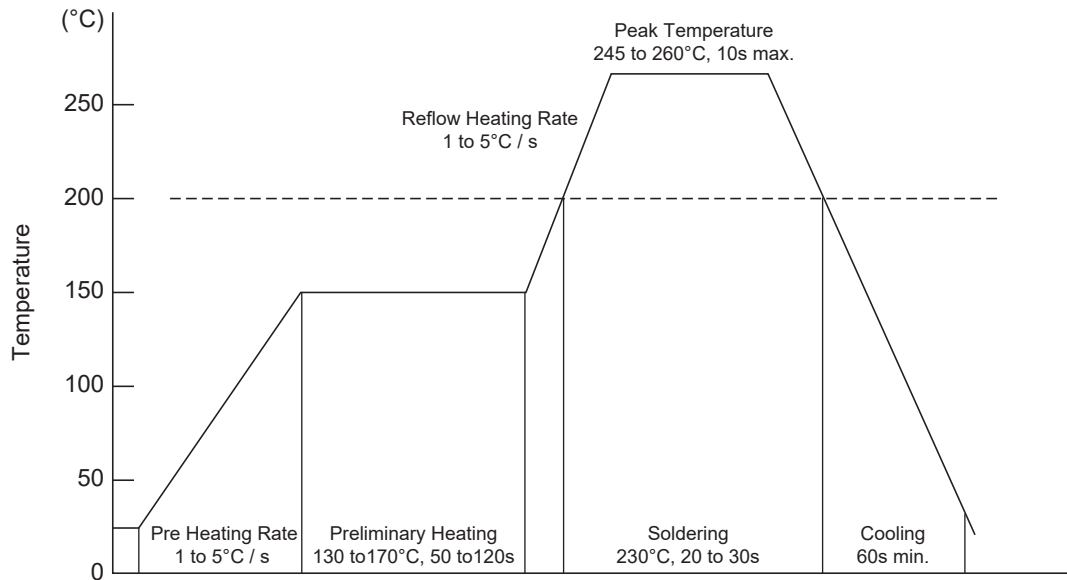
Ordering Information

Device	Package	Shipping
PJM40P40TE	TO-252	2,500PCS/Reel&13inches



Conditions of Soldering and Storage

◆ Recommended condition of reflow soldering



Recommended peak temperature is over 245°C. If peak temperature is below 245°C, you may adjust the following parameters:

- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

◆ Conditions of hand soldering

- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

- **Temperature**
5 to 40°C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

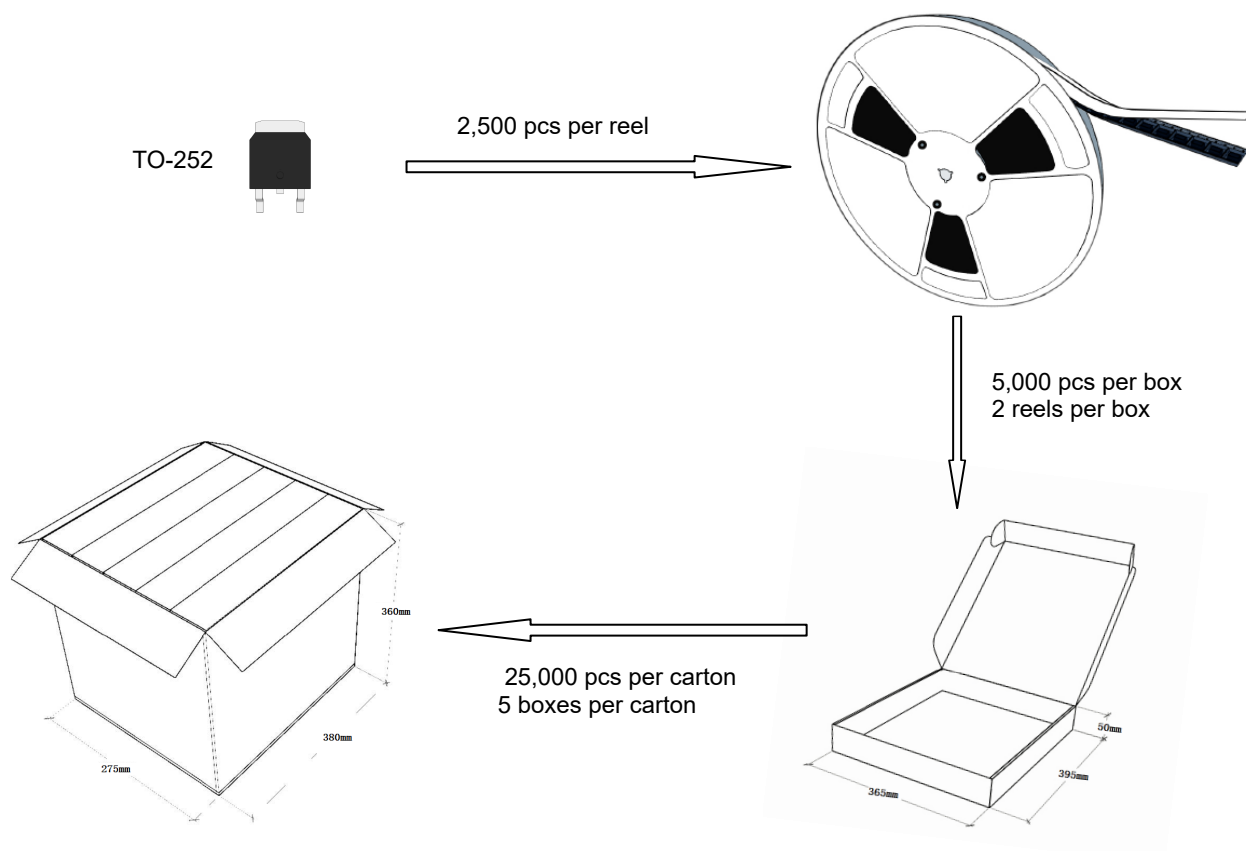


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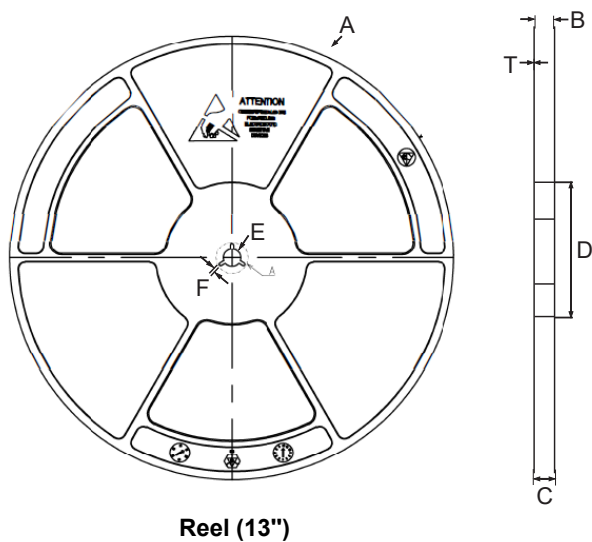
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Package Specifications

- The method of packaging



◆ reel data



Symbol	Value(unit:mm)
A	$\Phi 330.2 \pm 1$
B	17 ± 0.5
C	21.2 ± 2
D	$\Phi 100 \pm 0.5$
E	$\Phi 13.4 \pm 0.2$
F	2.3 ± 0.2
T	2.1 ± 0.2



Technical drawing of a 6-phase busbar assembly. The drawing shows a top view and a side view. The top view includes dimensions for the overall width (16.00 ± 0.30), the distance between the centers of the busbars (8.00 ± 0.10), and the distance between the centers of the busbars and the center of the busbar (4.00 ± 0.10). The diameter of the busbar is specified as $\phi 155 \pm 0.05$. The side view shows the height of the busbar (10.50 ± 0.10) and the distance between the busbars (2.90 ± 0.10). The side view also shows the distance between the busbars and the center of the busbar (2.00 ± 0.10). The side view includes dimensions for the busbar height (7.50 ± 0.10) and the distance between the busbars (1.75 ± 0.10). The side view also shows the distance between the busbars and the center of the busbar (0.60). The side view includes dimensions for the busbar height (0.20 ± 0.10) and the distance between the busbars (0.70 ± 0.10). The side view also shows the distance between the busbars and the center of the busbar (0.60). The side view includes dimensions for the busbar height (0.80 ± 0.10) and the distance between the busbars (0.60).