



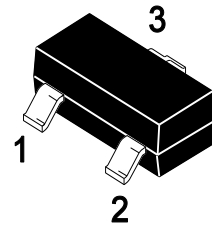
PJM2333PSA

P-Channel Enhancement Mode Power MOSFET

Features

- $V_{DS}=-12V$, $I_D=-6A$,
 $R_{DS(on)}<45m\Omega(\text{Max.})@V_{GS}=-2.5V$
 $R_{DS(on)}<30m\Omega(\text{Max.})@V_{GS}=-4.5V$
- High power and current handing capability
- Surface mount package

SOT-23

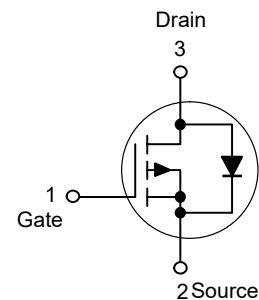


1.Gate 2.Source 3.Drain
Marking: R33

Application

- PWM application
- Load switch
- Power Management

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-12	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current -Continuous	I_D	-6	A
Drain Current -Pulsed ^{Note1}	I_{DM}	-20	A
Power Dissipation	P_D	0.9	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	150,-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Limit	Unit
Thermal Resistance,Junction-to-Ambient ^{Note2}	$R_{\theta JA}$	139	°C/W



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Electrical Characteristics (T_A=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0, I _D =-250μA	-12	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-12V, V _{GS} =0	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0	-	-	±100	nA
Gate Threshold Voltage ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-0.65	-1	V
Drain-Source On-State Resistance ^{Note3}	R _{DS(on)}	V _{GS} =-4.5V, I _D =-6A	-	19	30	mΩ
		V _{GS} =-2.5V, I _D =-5A	-	26	45	
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =-5V, I _D =-6A	-	17	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-6V, V _{GS} =0V, f=1.0MHz	-	1100	-	pF
Output Capacitance	C _{oss}		-	390	-	pF
Reverse Transfer Capacitance	C _{rss}		-	300	-	pF
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-6V, I _D =-1A, R _L =6Ω, V _{GEN} =-4.5V, R _g =6Ω	-	25	-	nS
Turn-on Rise Time	t _r		-	45	-	nS
Turn-Off Delay Time	t _{d(off)}		-	72	-	nS
Turn-Off Fall Time	t _f		-	60	-	nS
Total Gate Charge	Q _g	V _{DS} =-6V, I _D =-6A, V _{GS} =-4.5V	-	11.5	-	nC
Gate-Source Charge	Q _{gs}		-	1.5	-	nC
Gate-Drain Charge	Q _{gd}		-	3.2	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^{Note3}	V _{SD}	V _{GS} =0V, I _S =-1.0A	-	-	-1.2	V
Diode Forward Current ^{Note2}	I _S		-	-	-6	A

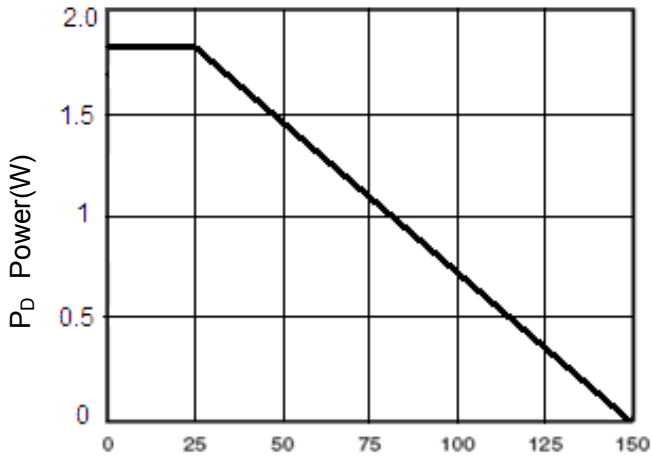
Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, t ≤ 10 sec.

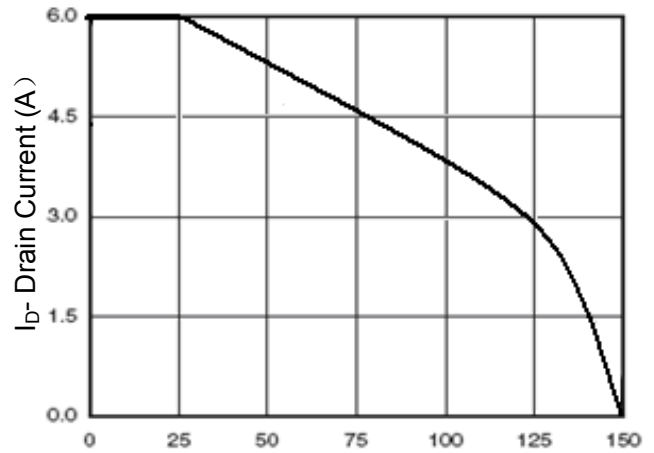
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.



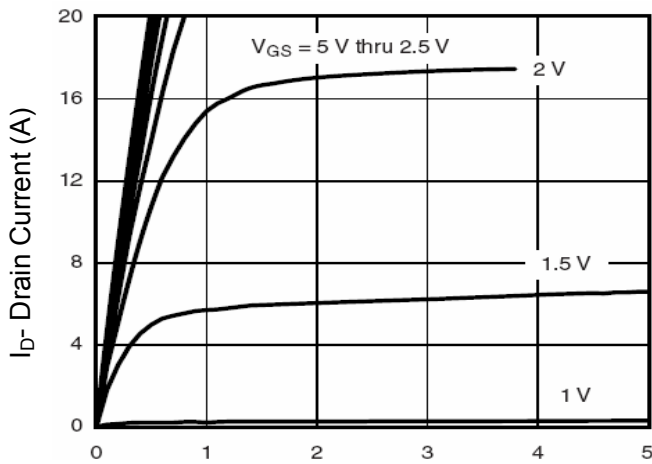
Typical Characteristics Curves



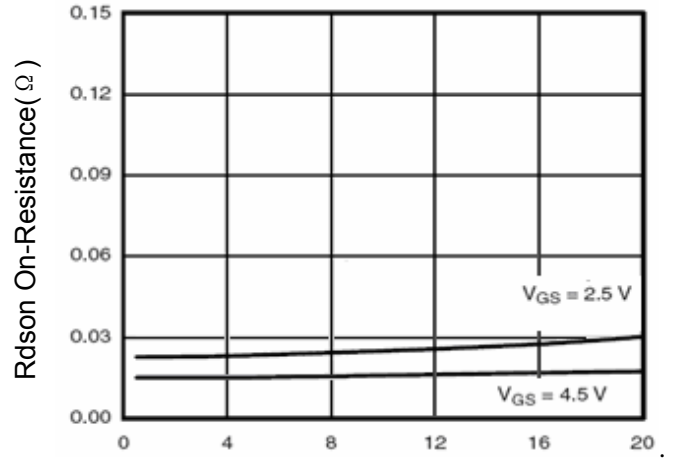
T_J-Junction Temperature (°C)
Power Dissipation



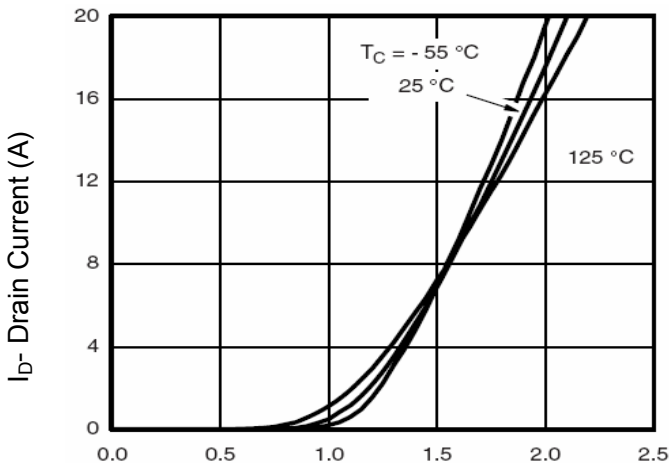
T_J-Junction Temperature (°C)
Drain Current



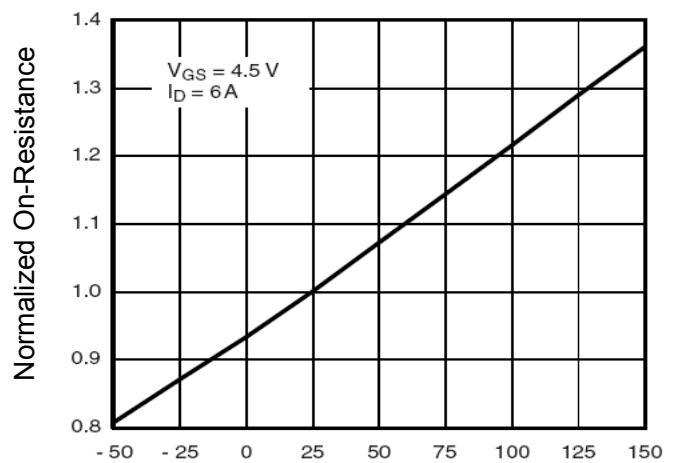
V_{DS} Drain-Source Voltage (V)
Output Characteristics



I_D- Drain Current (A)
Drain-Source On-Resistance



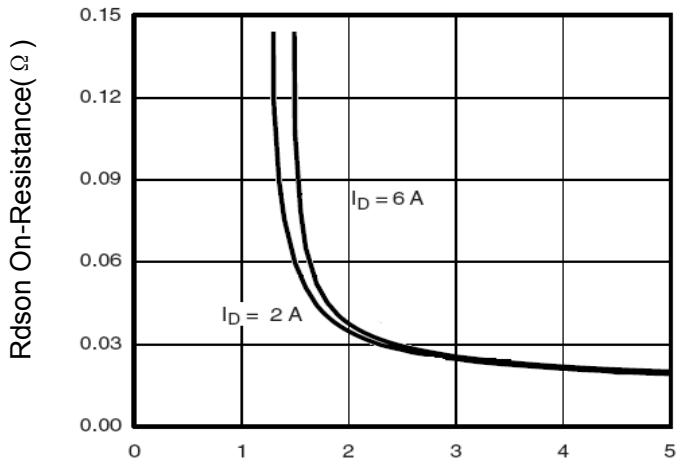
V_{GS} Gate-Source Voltage (V)
Transfer Characteristics



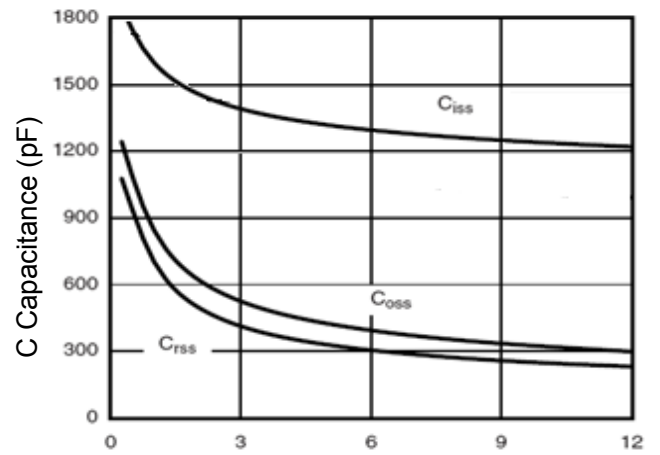
T_J-Junction Temperature (°C)
Drain-Source On-Resistance



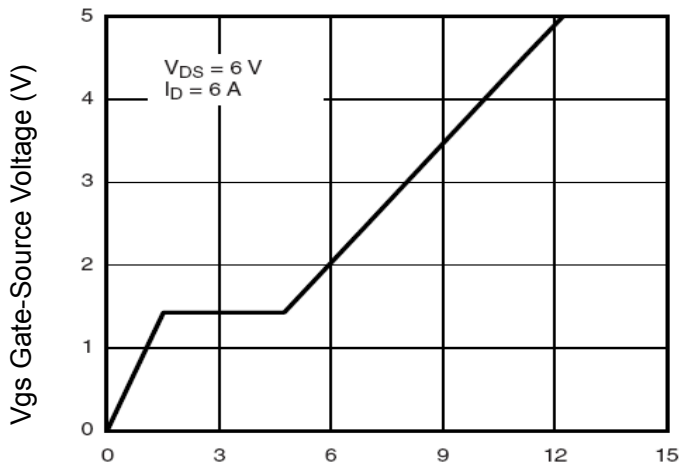
PJM2333PSA P-Channel Enhancement Mode Power MOSFET



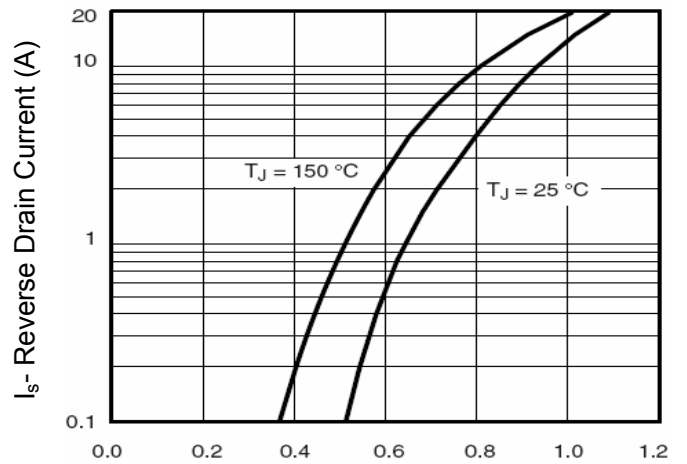
Vgs Gate-Source Voltage (V)
Rdson vs Vgs



Vds Drain-Source Voltage (V)
Capacitance vs Vds



Qg Gate Charge (nC)
Gate Charge



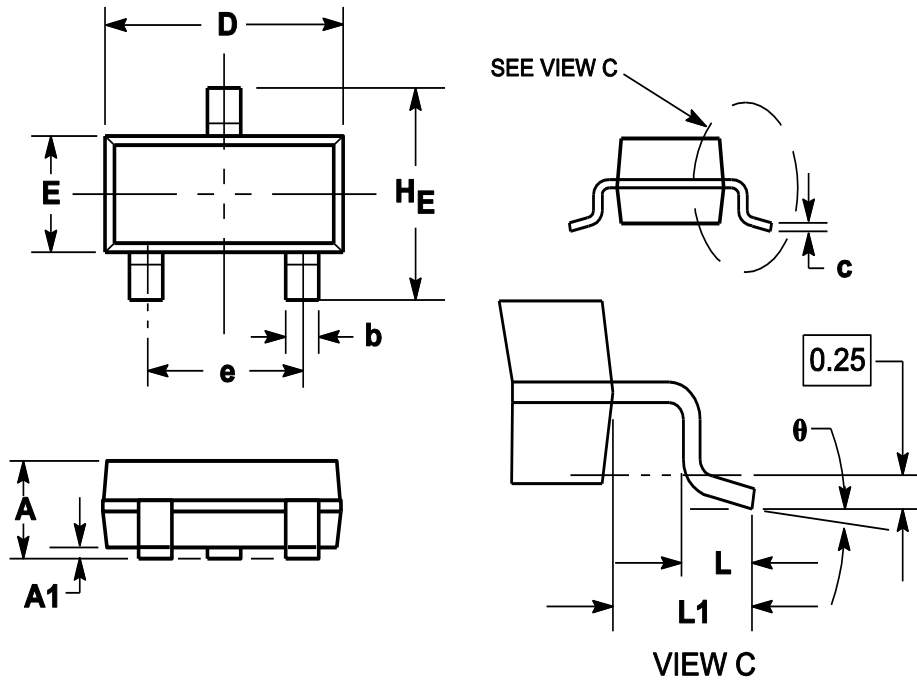
Vsd Source-Drain Voltage (V)
Source- Drain Diode Forward



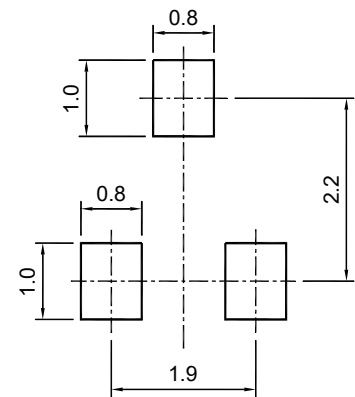
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Package Outline

SOT-23



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.900	1.025	1.150
A1	0.000	0.050	0.100
b	0.300	0.400	0.500
c	0.080	0.115	0.150
D	2.800	2.900	3.000
E	1.200	1.300	1.400
HE	2.250	2.400	2.550
e	1.800	1.900	2.000
L1	0.550REF		
L	0.300		0.500
θ	0°		8°



SOT-23 (TO-236)

Recommended Soldering Pad

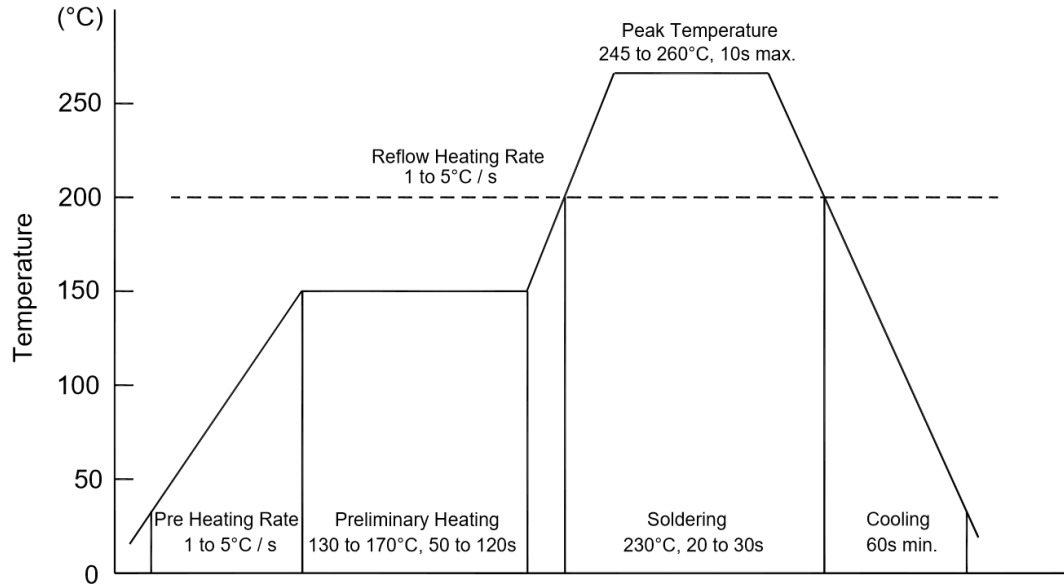
Ordering Information

Device	Package	Shipping
PJM2333PSA	SOT-23	3000PCS/Reel&Tape



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: 370 °C
- Time: 3s max.
- Times: one time

◆ Storage conditions

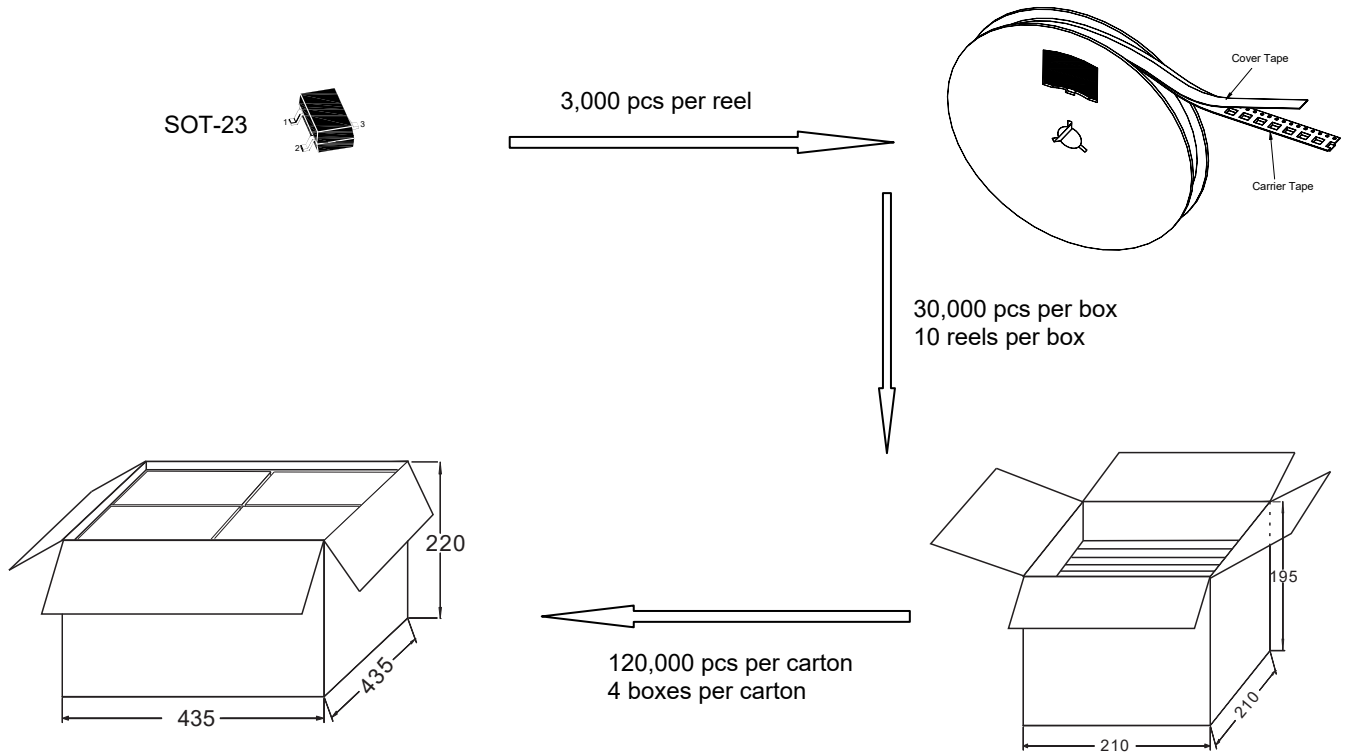
- **Temperature**
5 to 40 °C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing



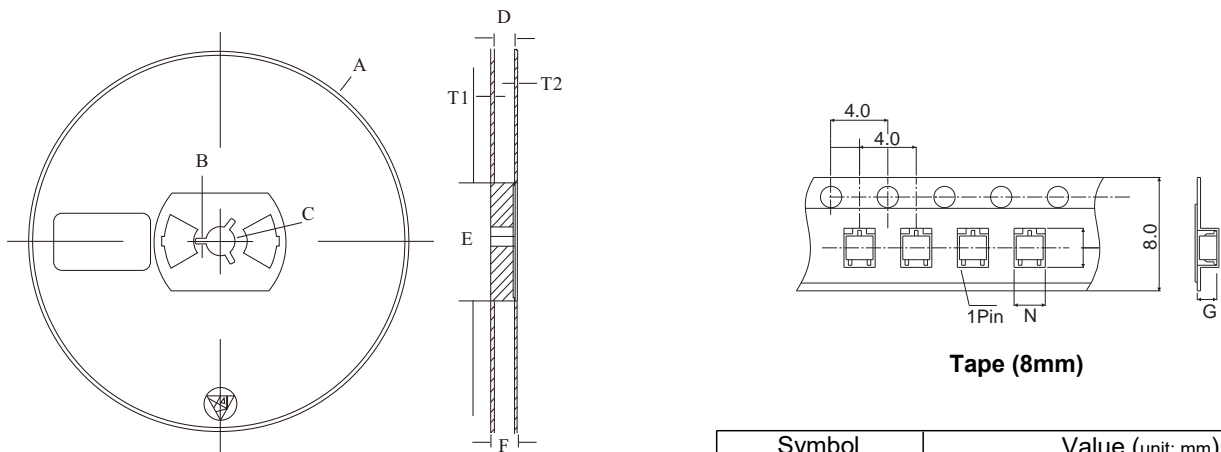
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Package Specifications

◆ The method of packaging



◆ Embossed tape and reel data



Symbol	Value (unit: mm)
A	$\varnothing 177.8 \pm 1$
B	2.7 ± 0.2
C	$\varnothing 13.5 \pm 0.2$
E	$\varnothing 54.5 \pm 0.2$
F	12.3 ± 0.3
D	$9.6 + 2 / - 0.3$
T1	1.0 ± 0.2
T2	1.2 ± 0.2
N	3.15 ± 0.1
G	1.25 ± 0.1