

SOT-23 Plastic-Encapsulate MOSFETS

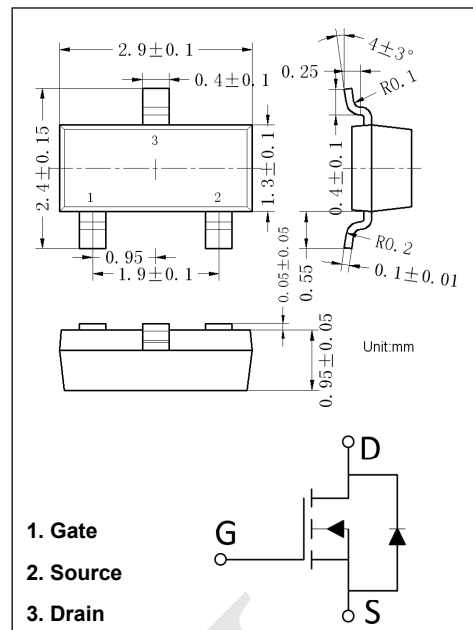
WNM2020-ALJ

20V N-Channel Enhancement Mode Field Effect Transistor

Features

- V_{DS} 20V, V_{GS} 8V, I_D 2.2A,
 $R_{DS(ON)} = 75m\Omega @ V_{GS} = 4.5V$.
 $R_{DS(ON)} = 90m\Omega @ V_{GS} = 2.5V$.
- Advanced trench process technology
- High-density cell design for ultra-low on-resistance

Marking: MON.



Description

WNM2020-ALJ is produced with high cell density DMOS trench technology, which is especially used to minimize on-state resistance. This device particularly suits low voltage applications such as portable equipment, power management and other battery powered circuits, and low in-line power dissipation are needed in a very small outline surface mount package. Excellent thermal and electrical capabilities.

Maximum Ratings ($T_a=25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Gate-Source Voltage	± 8	V
I_D	Drain Current	Continuous	2.2
		Pulsed	10
P_D	Power Dissipation ¹⁾	0.35	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^{\circ}C$

Electrical Characteristics (T_A=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 10μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 20V, V _{GS} = 0V			1.0	μA
I _{GSS}	Gate-body Leakage current	V _{DS} = 0V, V _{GS} = ±8V			±100	nA
On Characteristics ²⁾						
V _{GS(th)}	Gate-Threshold Voltage	V _{DS} = V _{GS} , I _D = 50μA	0.4	0.75	2.0	V
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} = 4.5V, I _D = 3.6A		70	85	mΩ
		V _{GS} = 2.5V, I _D = 3.1A		90	115	
g _{fs}	Forward Trans conductance	V _{DS} = 5V, I _D = 3.6A	2	7.7	14	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = 10V f = 1.0MHz		450		pF
C _{oss}	Output Capacitance			70		
C _{rss}	Reverse Transfer Capacitance			43		
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} = 5V, V _{GS} = 4.5V, I _D = 3.6A, R _G = 6Ω			15	ns
t _r	Rise Time				80	
t _{d(off)}	Turn-Off Delay Time				60	
t _f	Fall Time				25	
Drain-Source Diode Characteristics And Maximum Ratings						
V _{SD}	Diode Forward Voltage ²⁾	V _{GS} = 0V, I _S = 1.1A	0.5	0.8	1.15	V

Notes

1. Surface Mounted on FR4 Board, t < 10 sec.
2. Pulse Test: Pulse Width < 300μs, Duty Cycle < 2%

Typical Characteristics

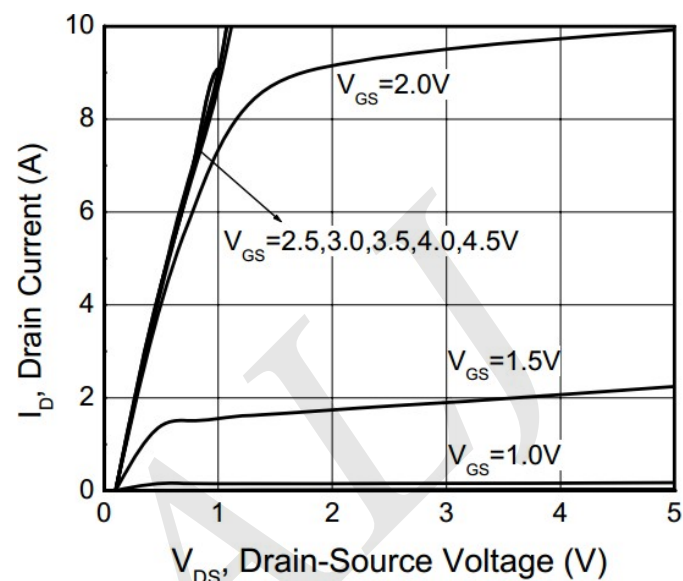


Figure 1. Output Characteristics

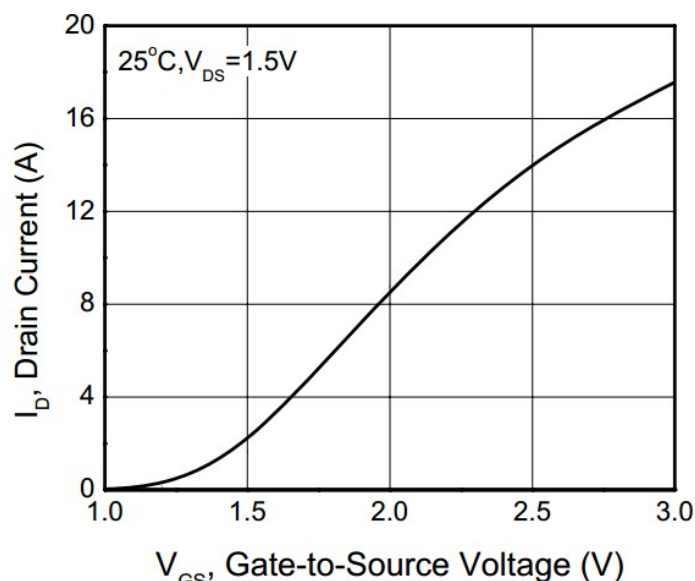


Figure 2. Transfer Characteristics

Typical Characteristics (Cont.)

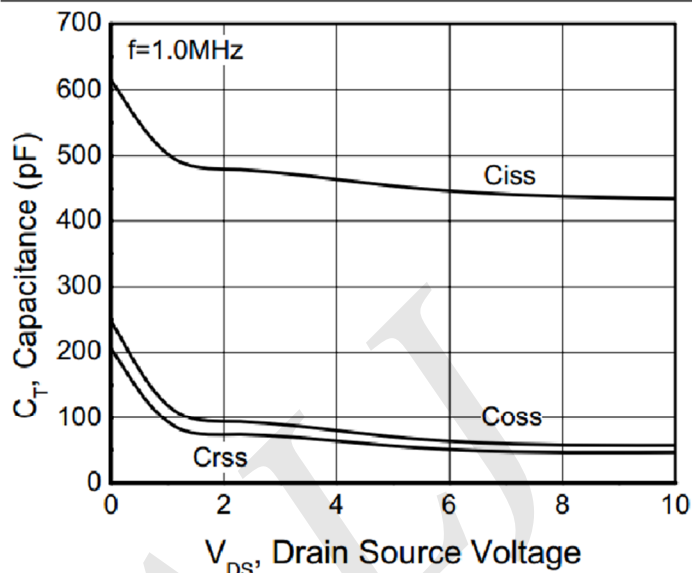


Figure 3. Capacitance

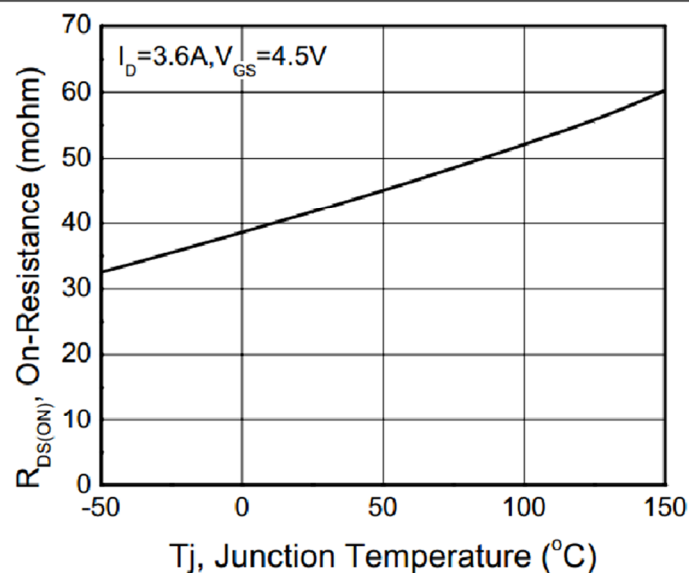


Figure 4. On-Resistance vs. Temperature

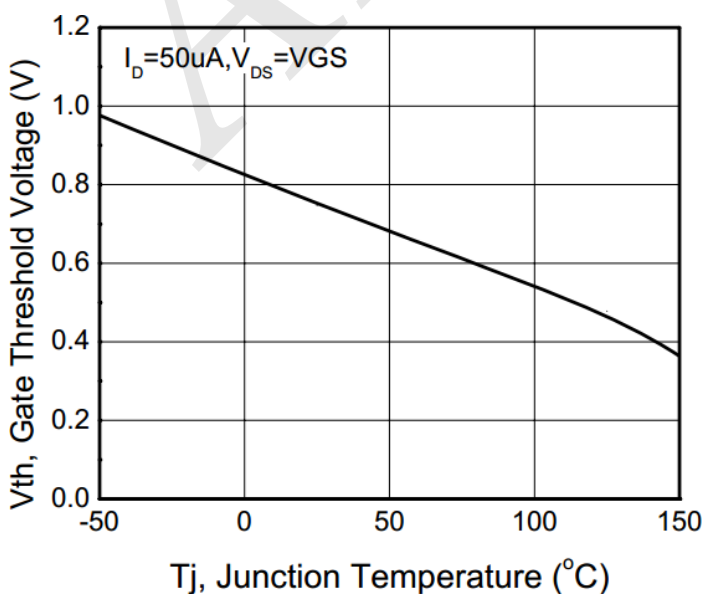


Figure 5. Gate Threshold Vs. Temperature

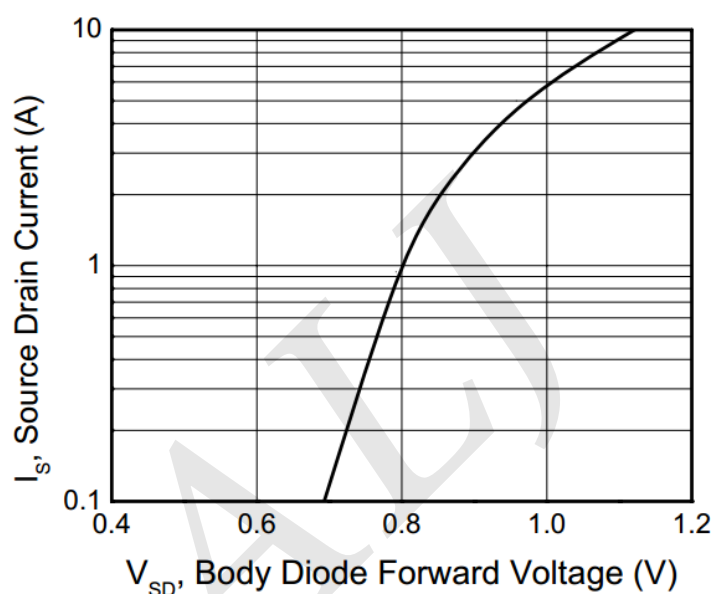


Figure 6. Body Diode Forward Voltage vs. Source Current

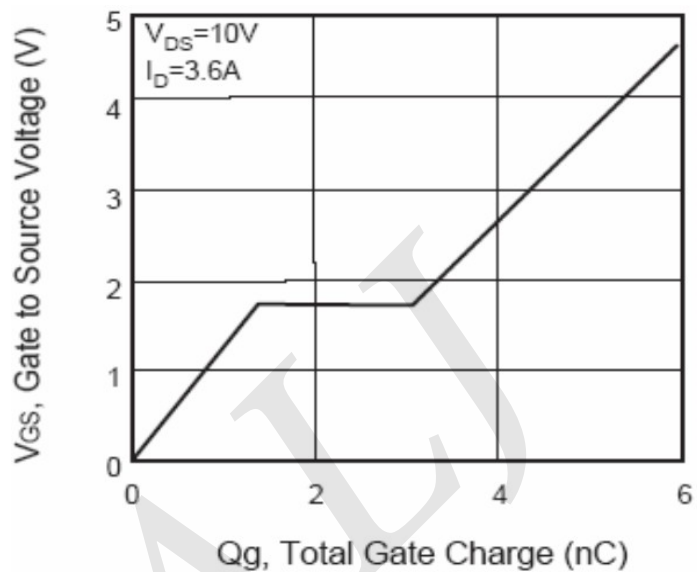


Figure 7. Gate Charge

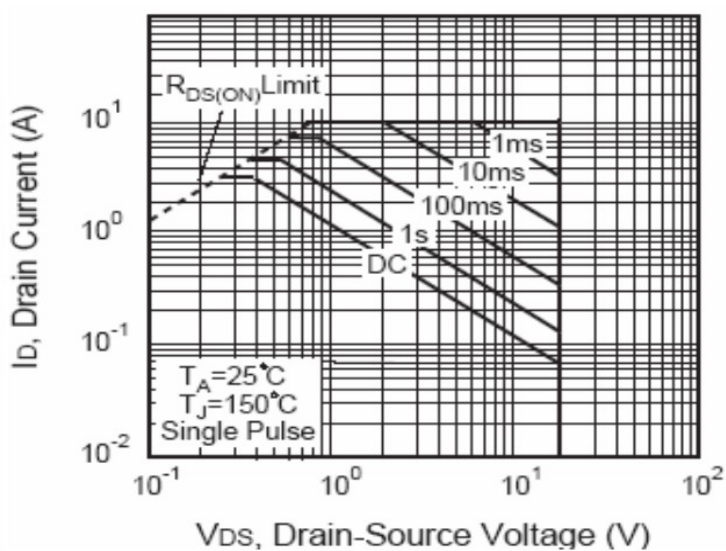
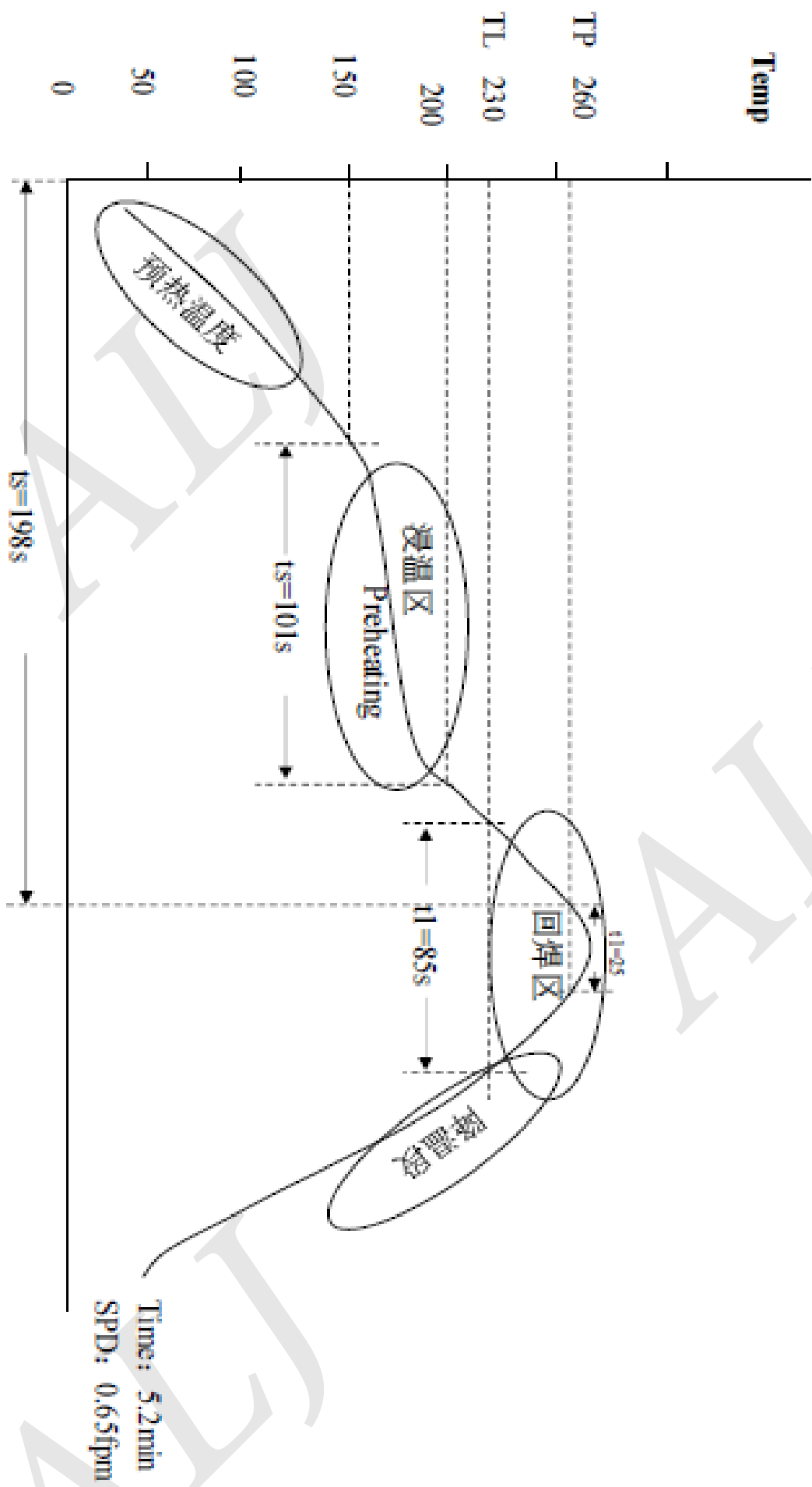
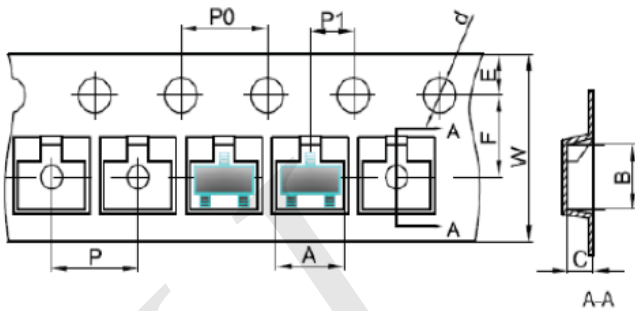


Figure 8. Maximum Safe Operating Area

IR—Reflow Profile



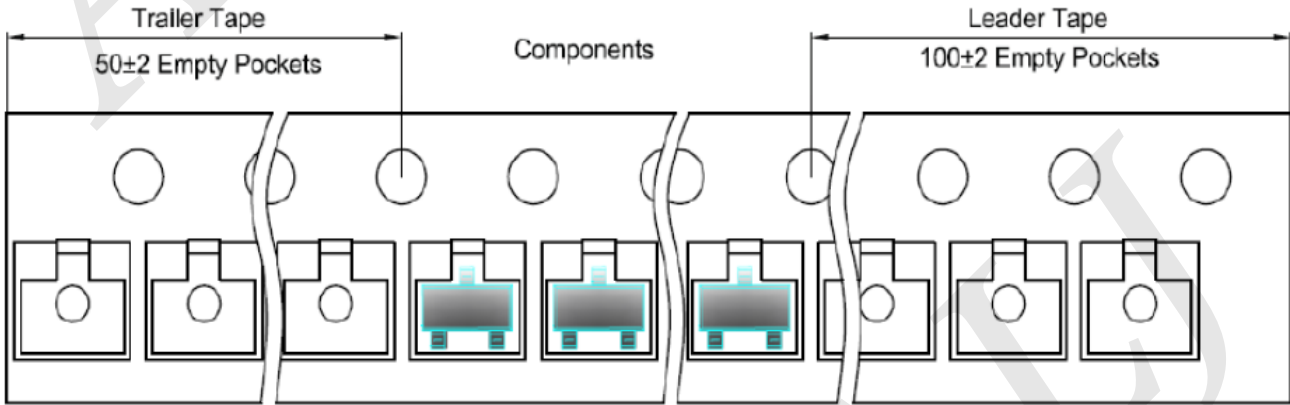
SOT-23 Embossed Carrier Tape



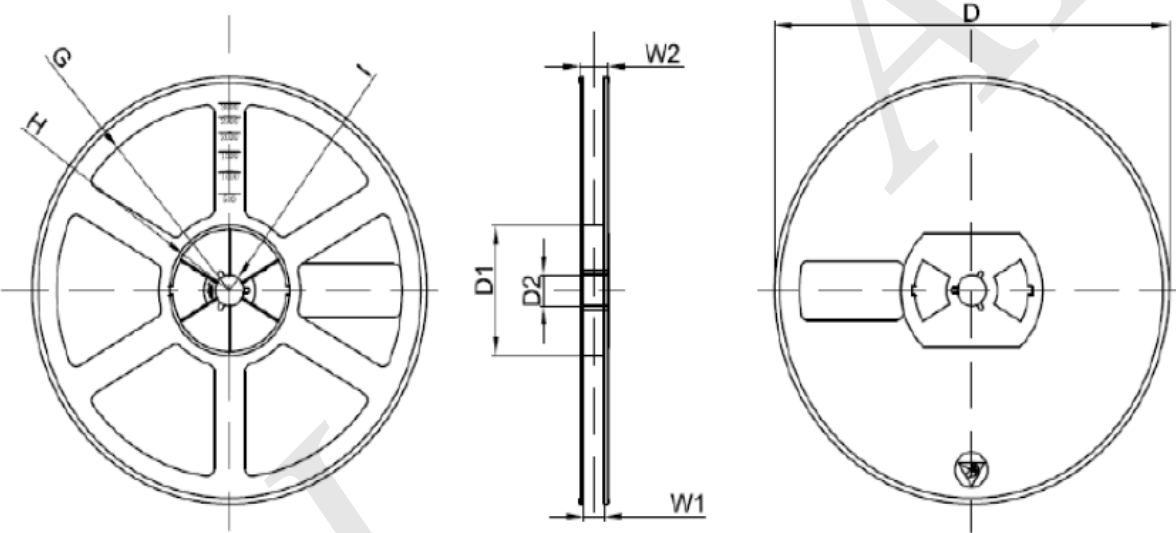
Packaging Description:
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive In nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"D1a	Ø178,00	54,40	13,00	R78,00	R25,60	R6,50	9,50	12,30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G,W,(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	