

General Characteristics



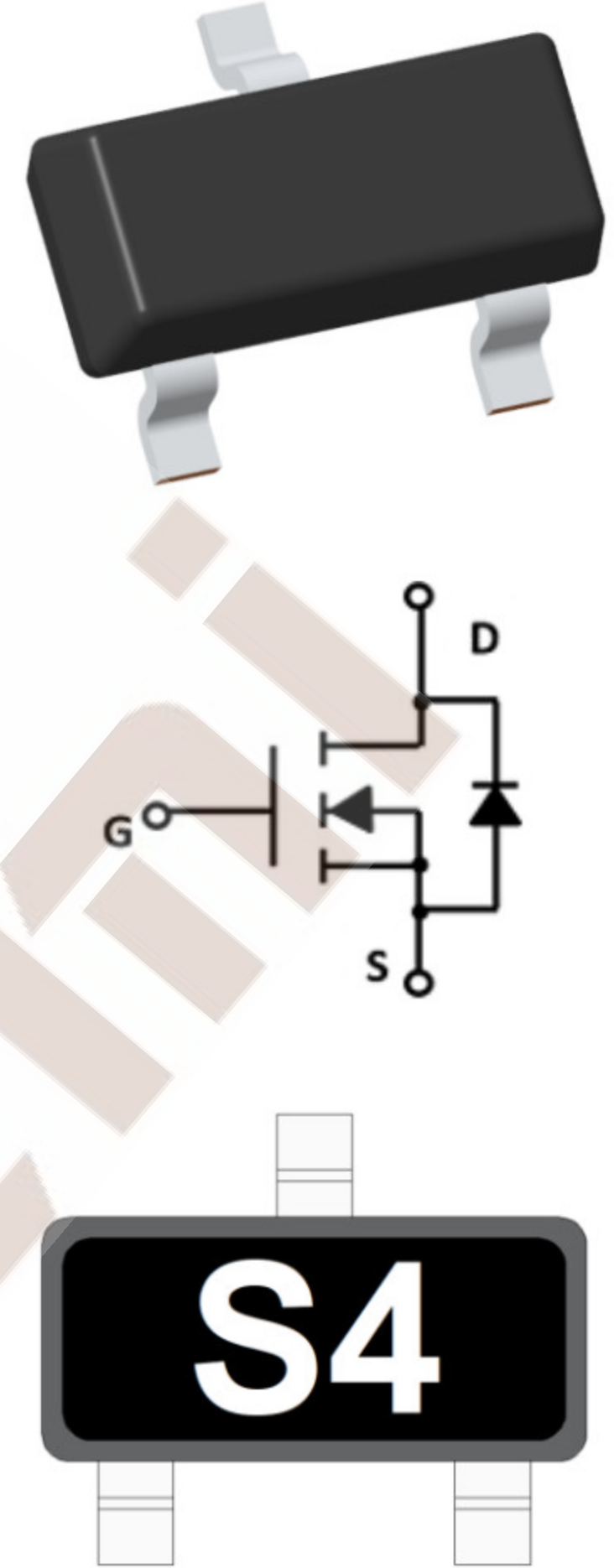
V_R	$R_{dson@VGS=10V(MAX)}$	I_D	T_{jmax}
30V	60m Ω	3.3A	150°C

Features

- SOT23 Package
- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 1
- High temperature soldering guaranteed 260°C/10seconds at terminals

Applications

- Load switch
- Power management



Package Marking and Ordering Information

Product ID	Package	Marking	Qty(PCS)
2304	SOT23	S4	3000

Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

Parameter	Symbols	2304	Units
Drain-Source Voltage	VDS	30	V
Gate-Source Voltage	VGS	±20	V
Continuous Drain Current	ID	3.3	A
Power Dissipation	PD	350	mW
Thermal resistance From junction to ambient	RθJA	357	°C/W
Junction temperature	Tj	-55~150	°C
Storage temperature range	Tstg	-55~150	°C

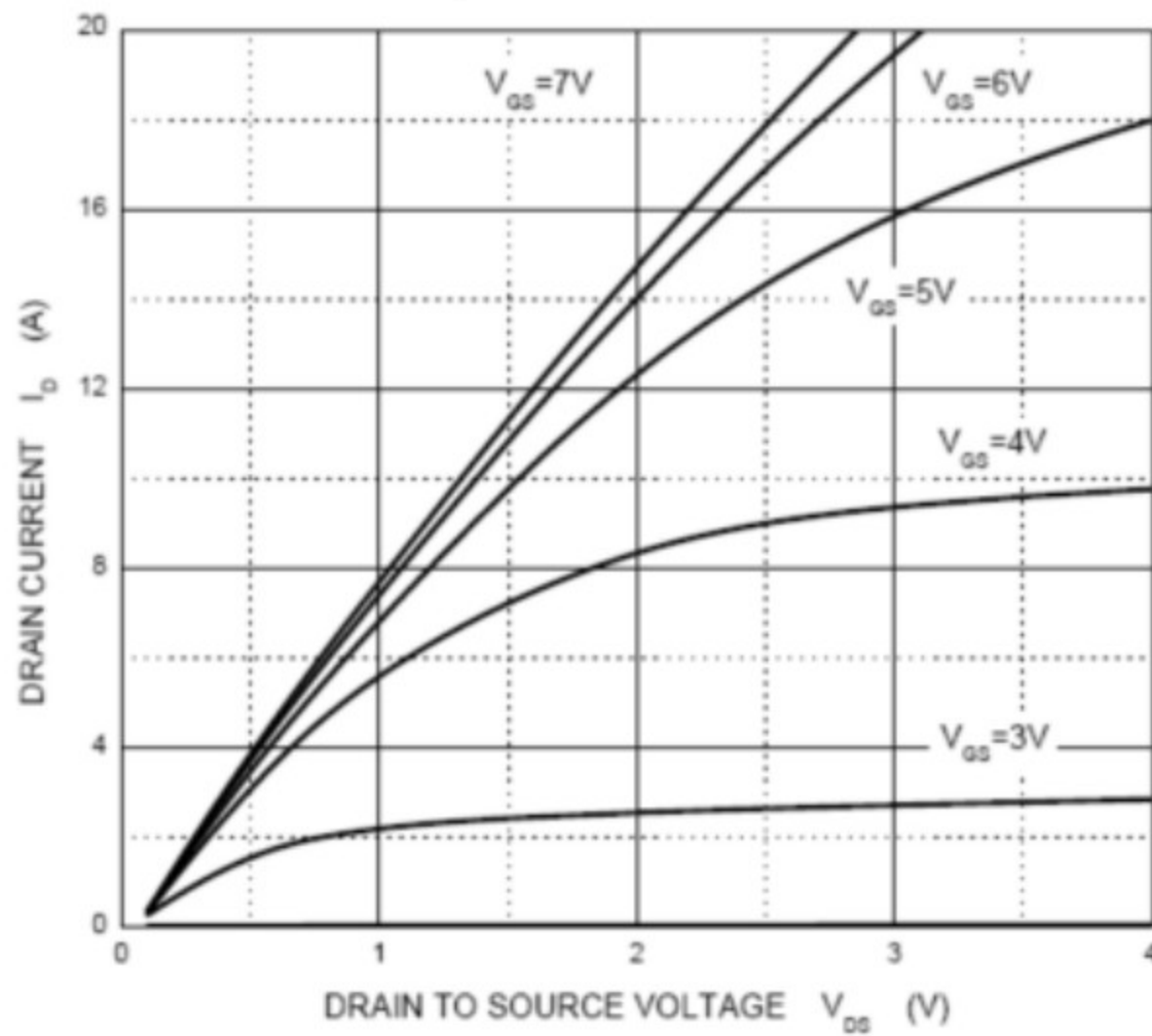
Note: 1. Device mounted on an FR4 Printed-Circuit Board (PCB), single-side copper, tin-plated and standard footprint.

Electrical Characteristics (T_J=25°C , unless otherwise noted)

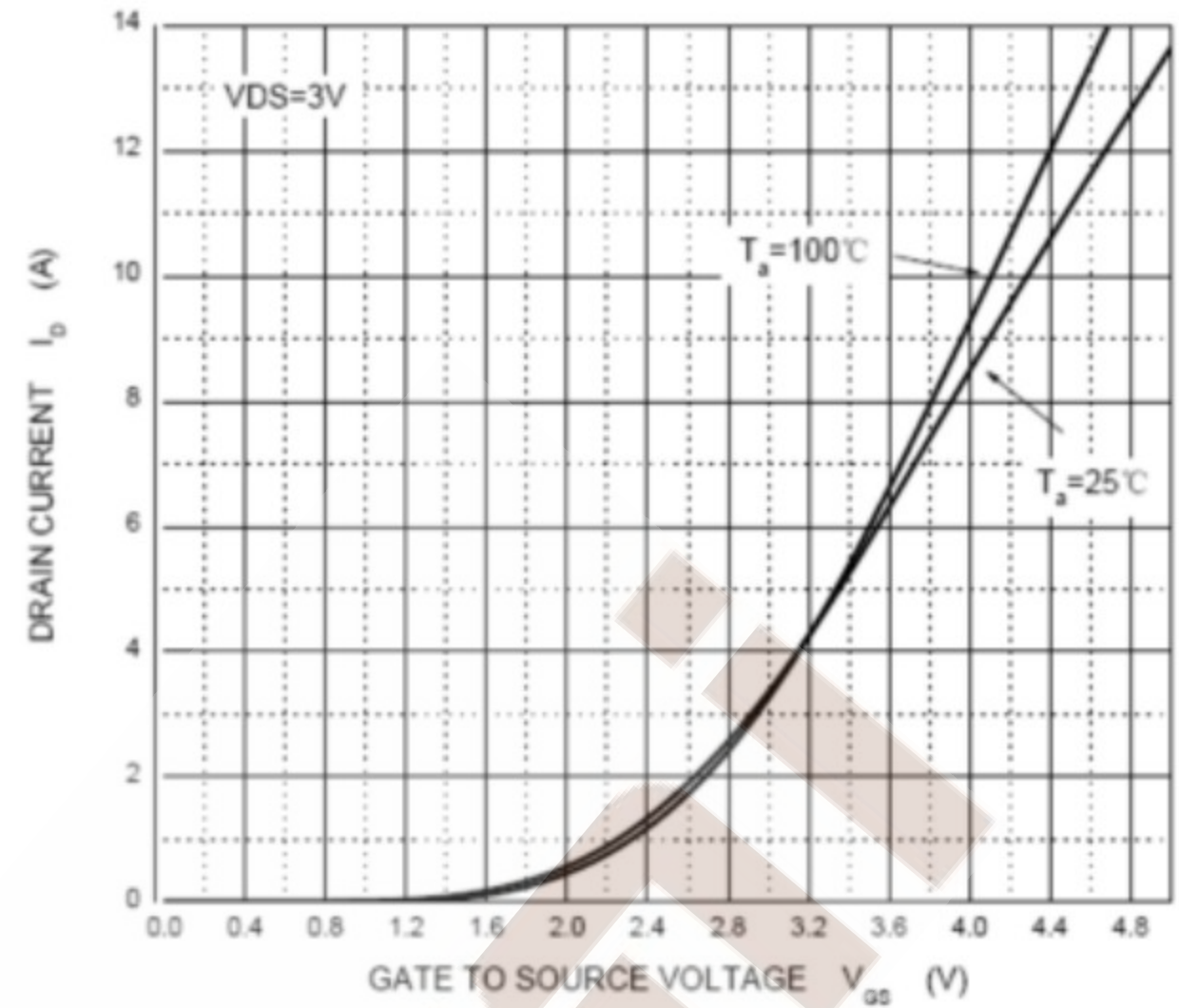
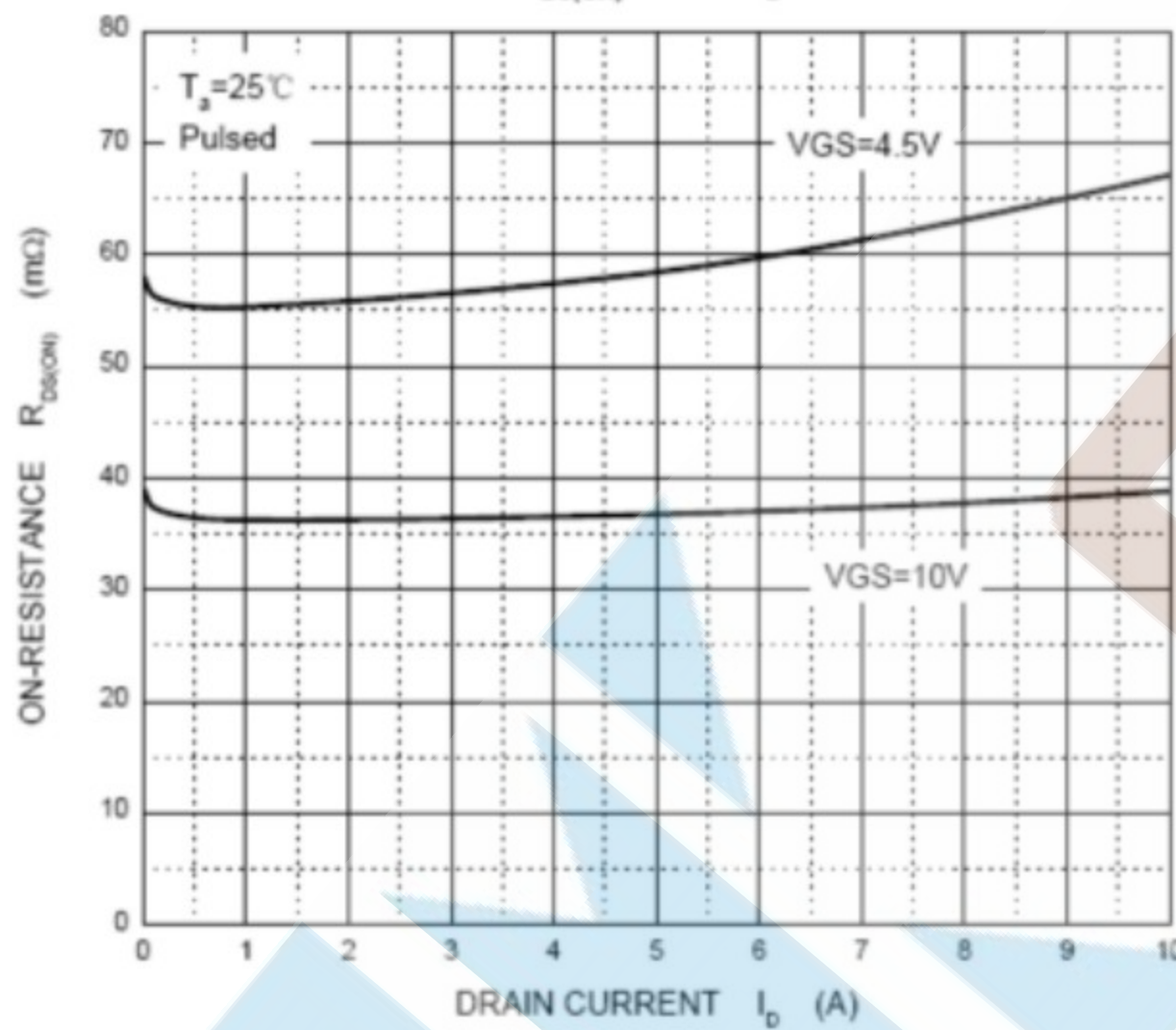
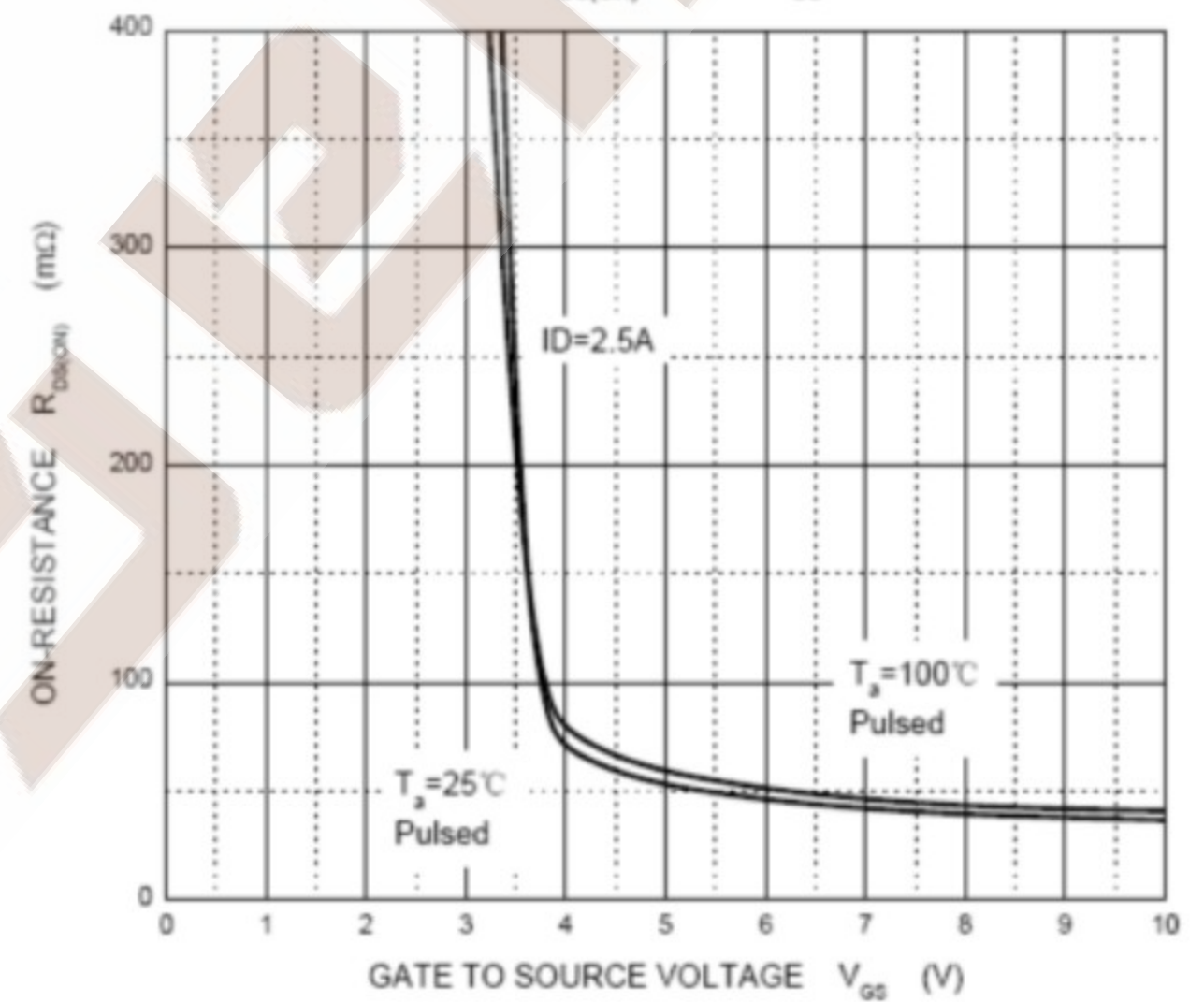
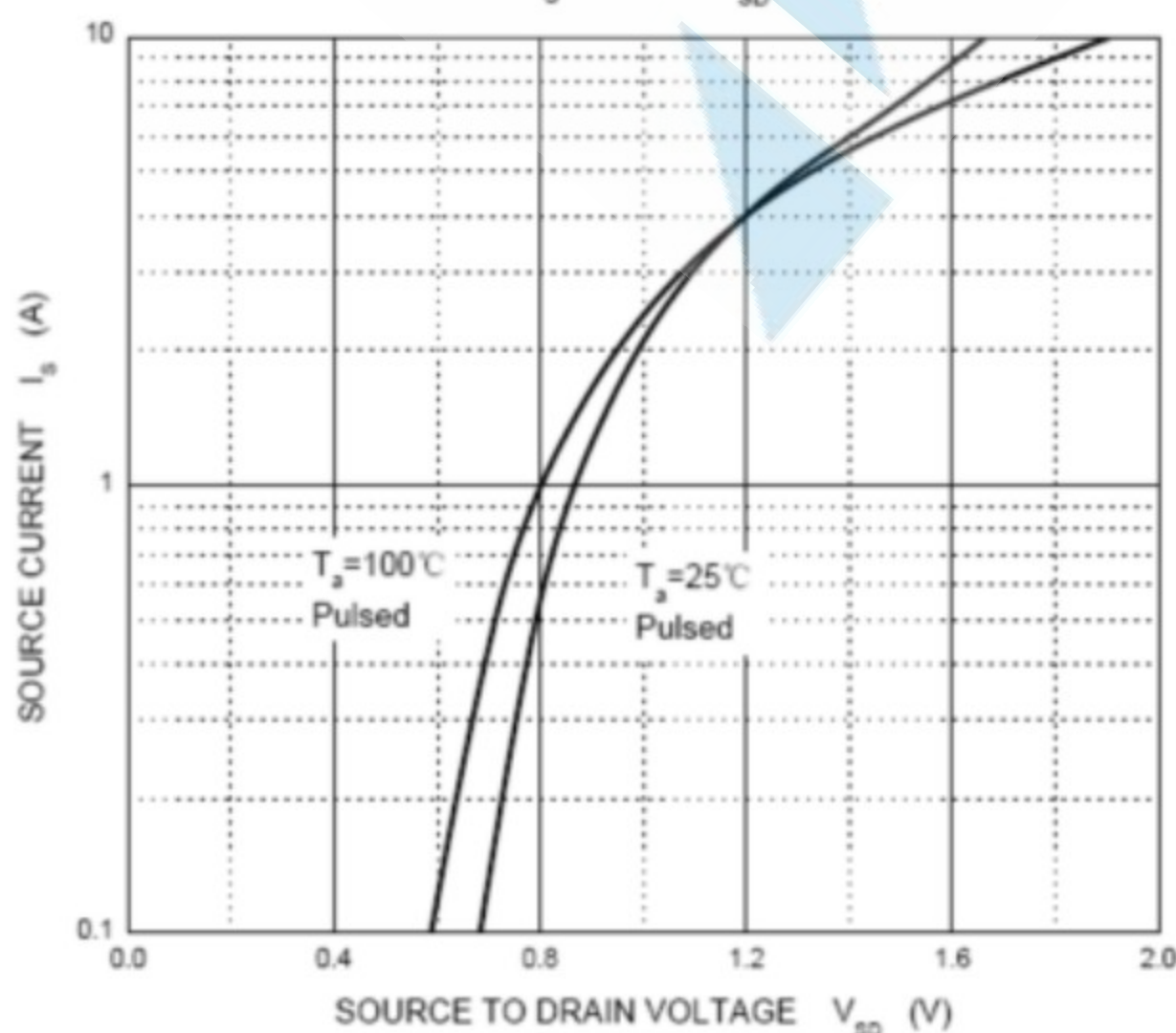
Parameter	Symbols	Test Conditions	Min	Type	Max	Units
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} =0V, I _D =250uA	30			V
Gate-Threshold voltage*	V _{th} (G _S)	V _{DS} =V _{GS} , I _D =250uA	1	1.55	2.2	V
Gate-body Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	uA
Drain-Source On-Resistance*	R _{DS} (ON)	V _{GS} =10V, I _D =3.2A		37	60	mΩ
		V _{GS} =4.5V, I _D =2.8A		57	75	
Diode Forward voltage	V _{SD}	I _S =2.7A, V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				1.4	A
Gate-Source Charge	Q _{gs}	V _{GS} =4.5V, V _{DS} =15V, I _D =3.4A		2.1	3.2	nC
Output Capacitance	Q _{gd}			0.85		
Reverse Transfer Capacitance	Q _g			0.65		
Input capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHZ		235		pF
Output capacitance	C _{oss}			45		
Reverse transfer capacitance	C _{rss}			17		
Turn-on Delay Time	t _d (on)	V _{GS} =4.5V, V _{DD} =10V, I _D =2.7A, R _{GEN} =1Ω		12	20	ns
Rise Time	t _r			50	75	
Turn-off Delay Time	t _d (off)			12	20	
Fall Time	t _f			22	35	

Ratings And Characteristic Curves

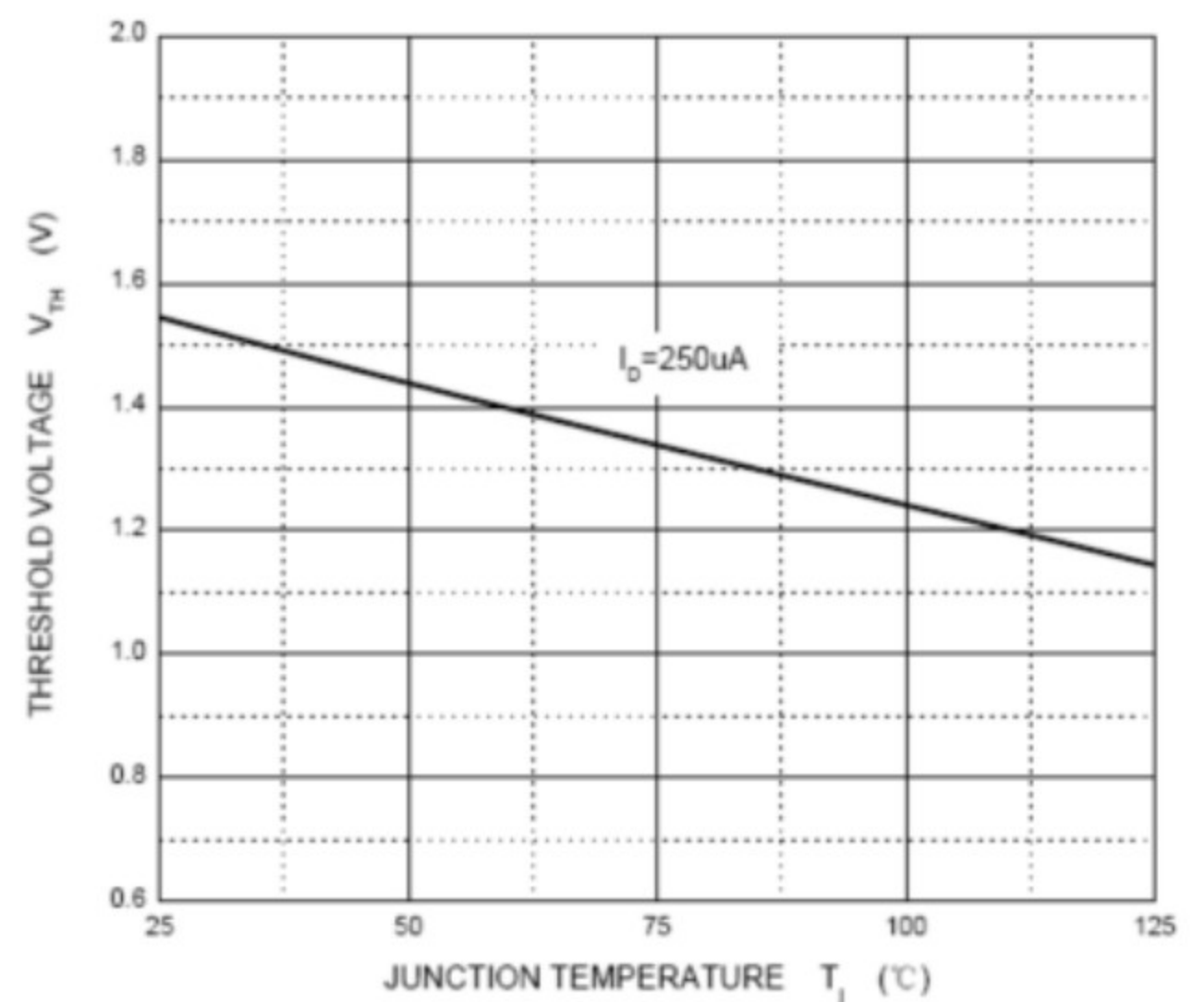
Output Characteristics



Transfer Characteristics

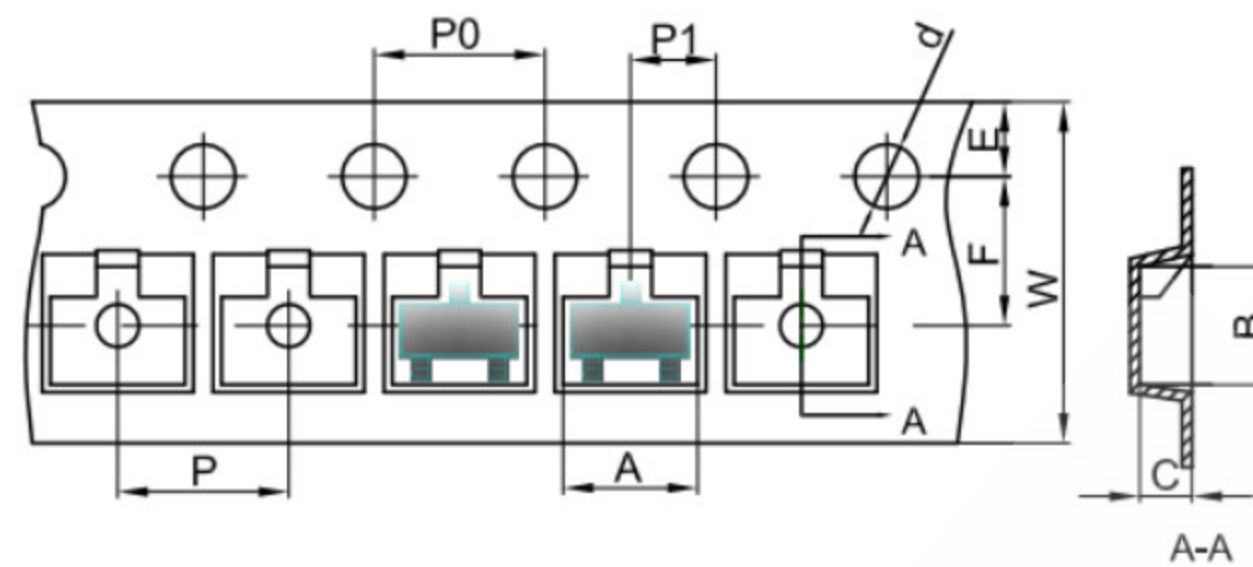

 $R_{DS(ON)}$ — I_D

 $R_{DS(ON)}$ — V_{GS}

 I_S — V_{SD}


Threshold Voltage

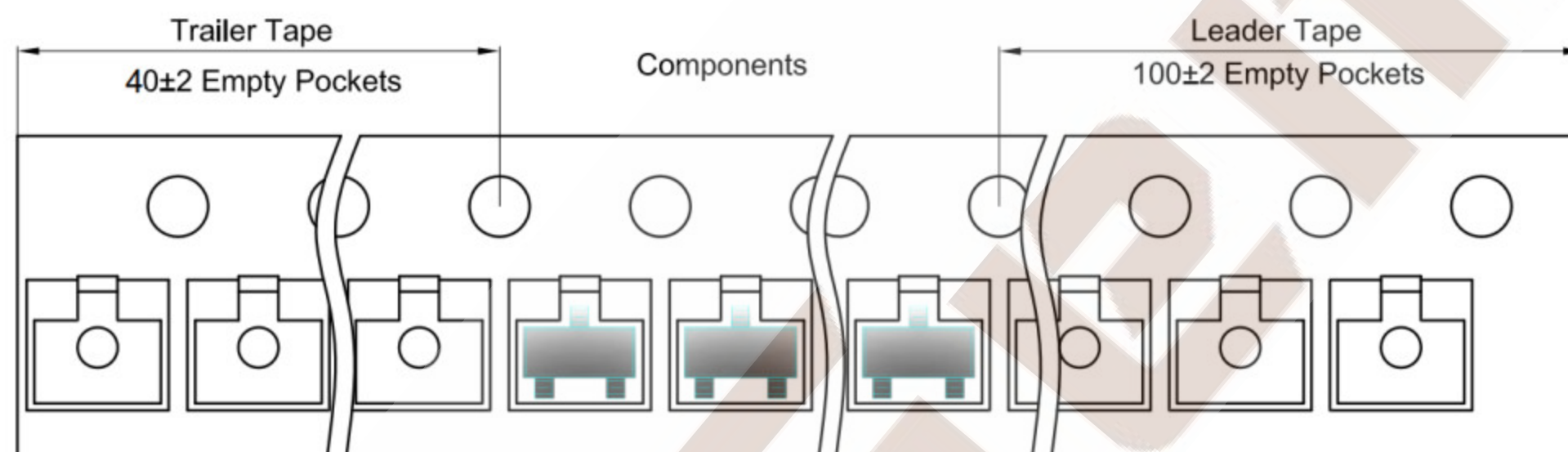


Package Information

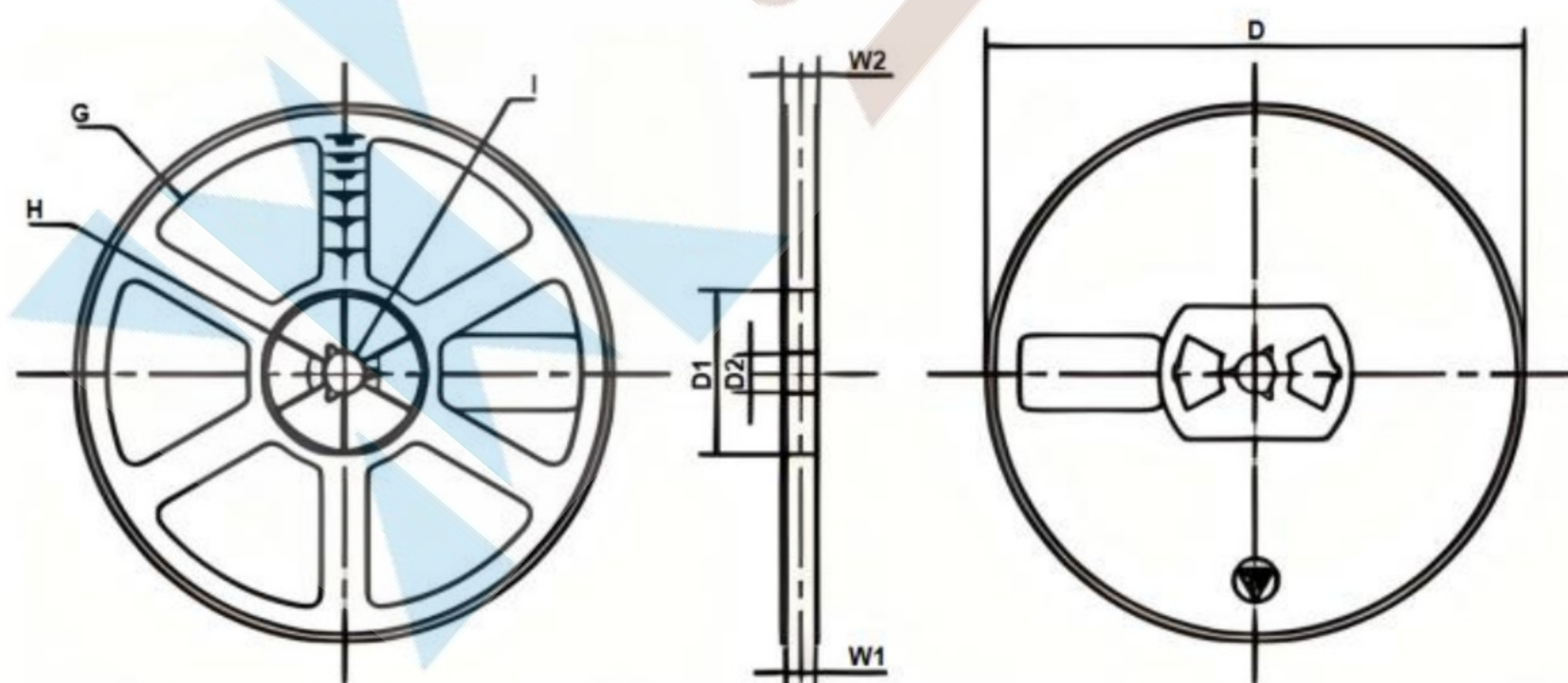
Carrier Dimension(mm)



Dimensions are in millimeter															
Pkg Type	A0	A1	B0	B1	K0	D0	D1	E	F	P0	P1	P2	10*P0	W	T
SOT-23	3.15	1.09	2.77	2.15	1.22	1.55	1.00	1.75	3.50	4.00	4.00	2.00	40.00	8.00	0.20
Tolerance	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.2	±0.1	±0.03



Reel Dimension(mm)



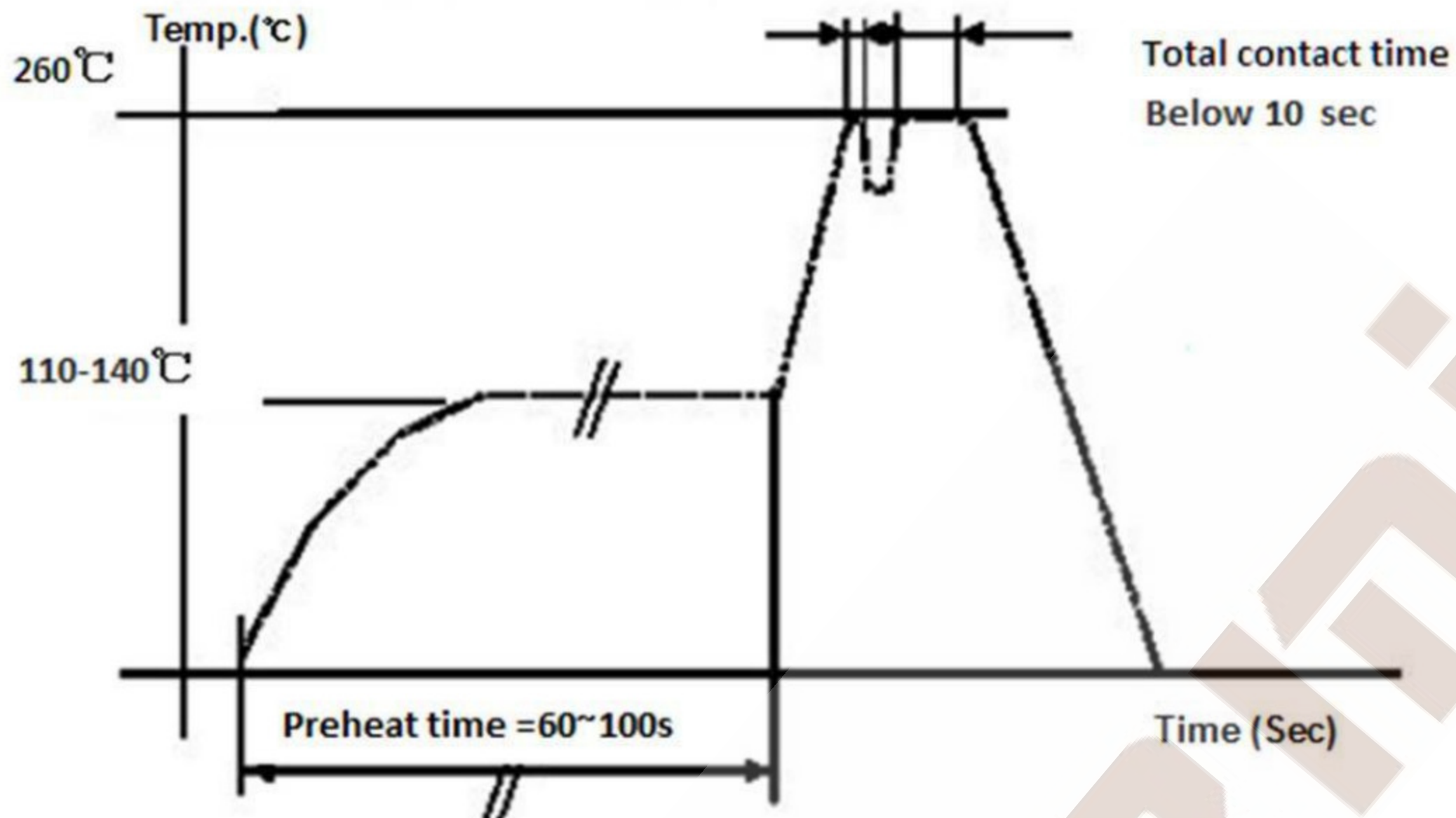
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Φ178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30
Tolerance	±2	±1	±1	±1	±1	±1	±1	±1

Package Specifications

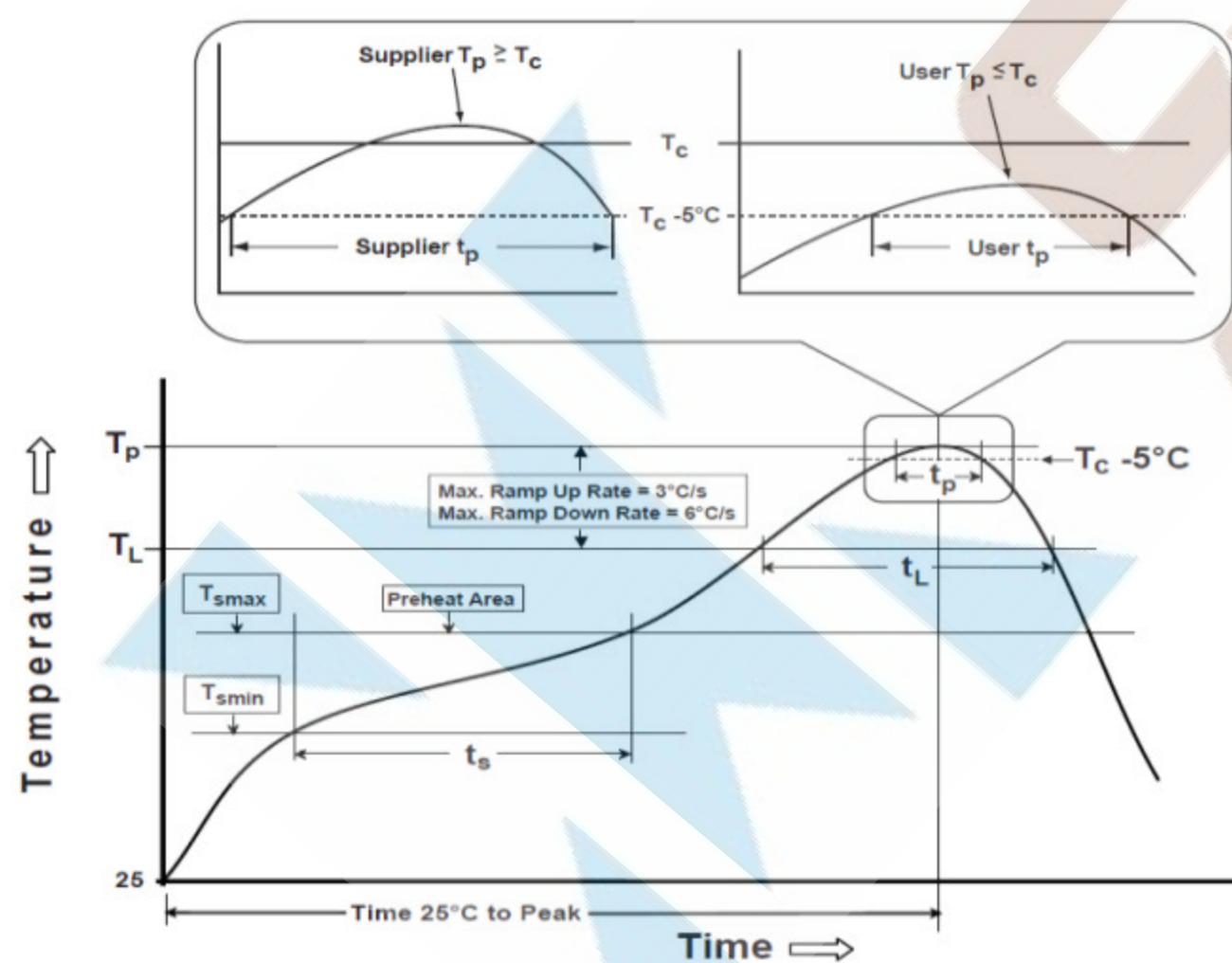
Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (Kpcs)	Box Size (mm)	QTY/Box (Kpcs)	Carton Size (mm)	Q'TY/Carton (Kpcs)
SOT23	7'	178	3	210*208*203	45	440*400*230	180

Recommended Soldering Profile for Rectifier Diodes (Pb Free)

a) Wave Soldering Profile



b) Reflow Soldering Profile (Pb Free Application), refer to IPC/JEDEC J-STD-020

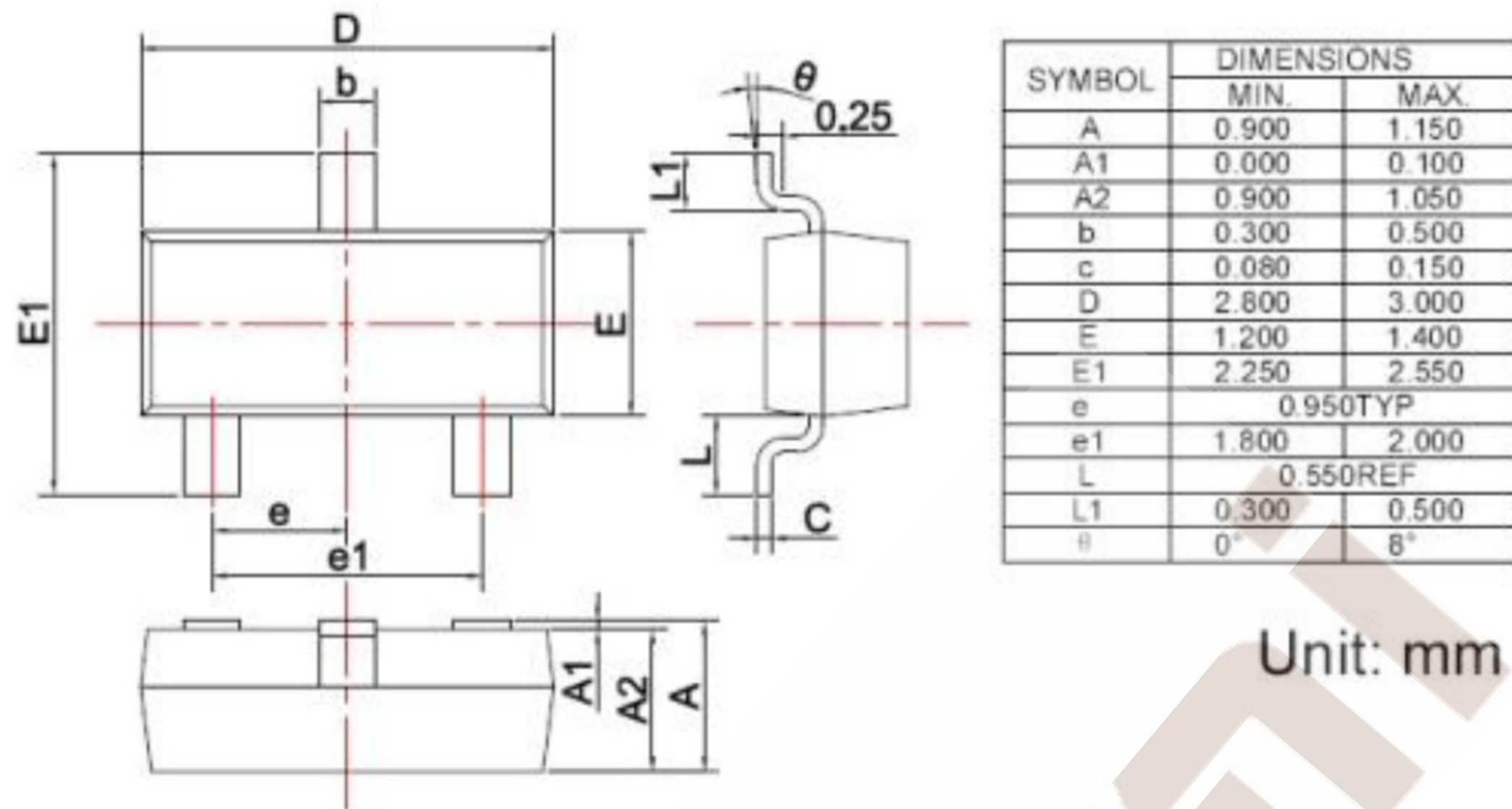


Preheat/Soak Temperature Min (T_{min}) Temperature Max (T_{max}) Time (ts) from (T_{min} to T_{max})	50 °C 200 °C 60-120 seconds
Melting Point of Solder (Sn Ag Cu)	217°C
Ramp-up Rate to 217°C(Melting Point of Solder)	3°C/sec
Time at Temp.>217°C (Melting Point of Solder)	60~150 Sec
Peak Temperature	255±5°C
Time within 5°Cbelow Peak Temp.	20~40 Sec
Cooling Rate	6°C/sec (max)
Time from 25°C to Peak Temp.	8min (max)

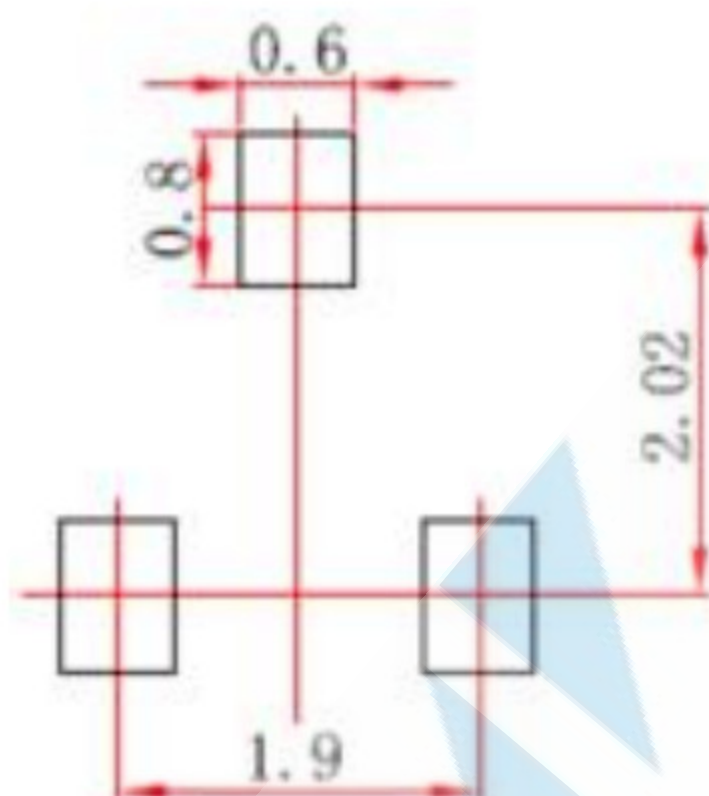
c) Manual Soldering

When using an electric soldering iron for manual soldering, it is recommended that the temperature does not exceed 300 °C and the soldering time is less than 10 seconds.

Package Mechanical Data



Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

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