

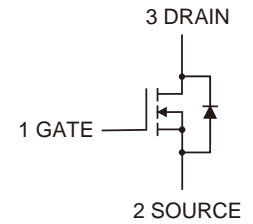
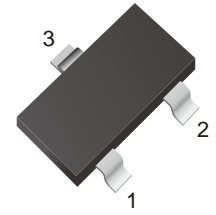
N-Channel Mosfet

Features

- Epoxy meets UL 94 V-0 flammability rating
- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- Lead free in comply with EU RoHS 2011/65/EU directives

Mechanical Data

- Case: SOT-23
- Approx. Weight: 8.1mg



Ordering Information

Part Number	Marking	Shipping	Reel
LTM2300N-TR3	2300	3000PCS Tape&Reel	7 inches
LTM2300N-TR12	2300	12000PCS Tape&Reel	13 inches

Maximum Ratings ($T_a = 25^\circ\text{C}$)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Drain Current-Continuous	4.5	A
I_{DM}	Pulsed Drain Current ($t_p = 10\mu\text{s}$)	14.4	A
P_D	Power Dissipation	1	W
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	125	$^\circ\text{C}/\text{W}$
T_j	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55~+150	$^\circ\text{C}$



Electrical Characteristics (Ta = 25°C)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	22		V
$V_{GS(th)}$	Gate-Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.75	1.2	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=16V, V_{GS}=0V$			1.0	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$			± 100	nA
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=2.5V, I_D=2A$		28	35	m Ω
		$V_{GS}=4.5V, I_D=3A$		22	30	m Ω
g_{FS}	Forward transconductance	$V_{DS}=5V, I_D=3A$		10.5		S
V_{SD}	Diode forward voltage	$I_D=1A, V_{GS}=0V$			1.2	V
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		79	820	pF
C_{oss}	Output Capacitance			118		
C_{rss}	Reverse Transfer Capacitance			85		
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DS}=15V, R_L=2.6\Omega, R_{GEN}=3\Omega$			6.5	nS
t_r	Turn-on rise Time			3.1		
$t_{d(off)}$	Turn-off Delay Time			15.1		
t_f	Turn-off Fall Time			2.7		
Q_g	Total Gate Charge	$V_{DS}=15V, I_D=3A, V_{GS}=4.5V$		4.6		nC
Q_{gS}	Gate-Source Charge			0.7		
Q_{gd}	Gate-Drain("Miller") Charge			1.5		

Characteristics Curves

Fig.1 Output Characteristics

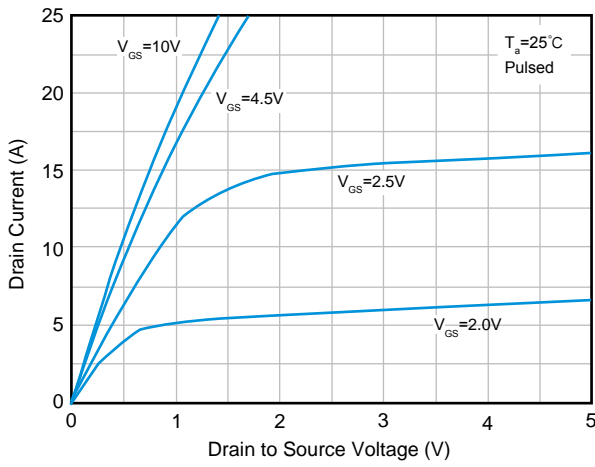


Fig.2 Transfer Characteristics

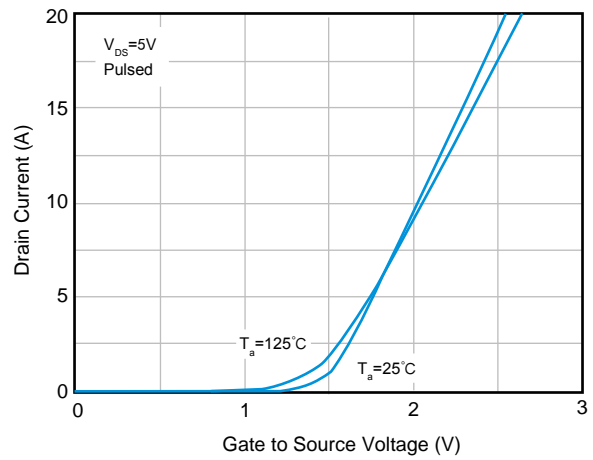


Fig.3 Capacitance Characteristics

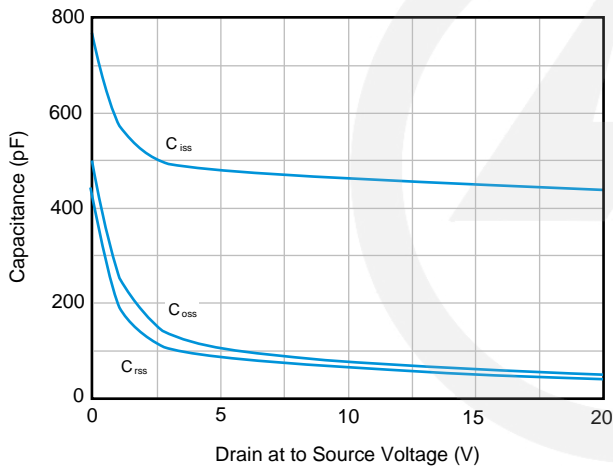


Fig.4 $R_{DS(ON)}$ — Temperature

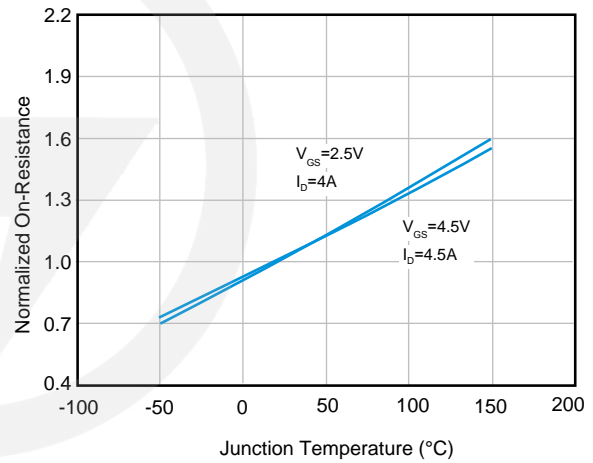


Fig.5 I_S — V_{SD}

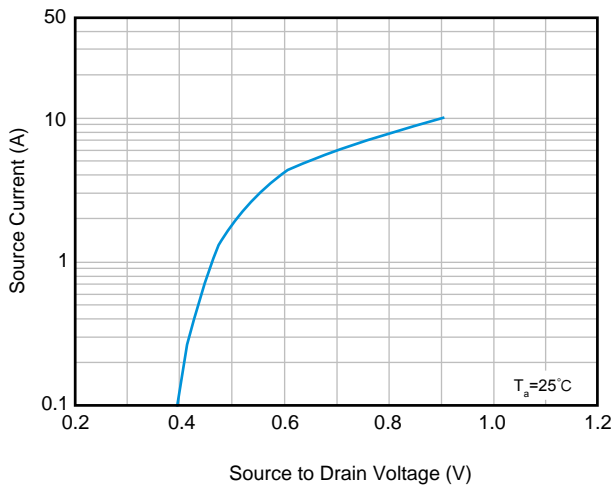
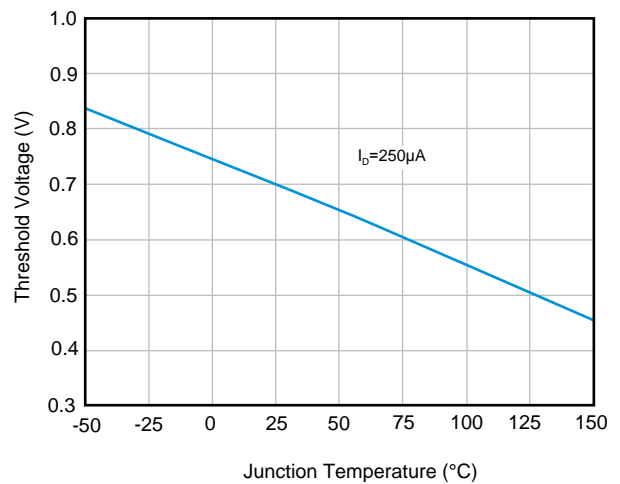
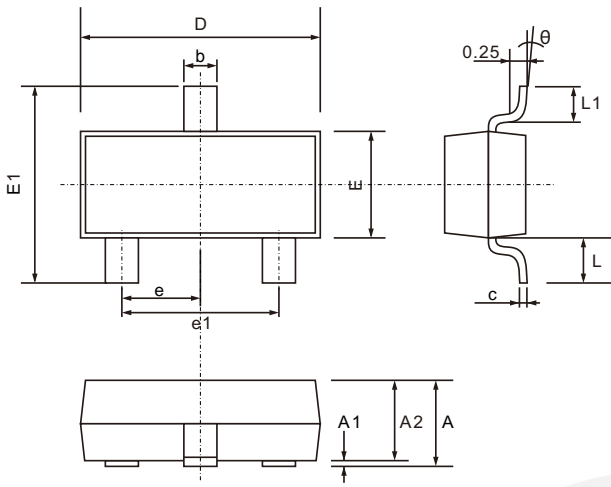


Fig.6 Threshold Voltage



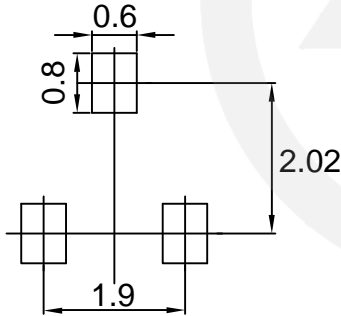
SOT-23 Package Outline

Unit: mm



SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.200
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.200
D	2.700	3.100
E	1.200	1.400
E1	2.200	2.600
e	0.950 TYP.	
e1	1.750	2.050
L	0.550 TYP.	
L1	0.300	0.500
θ	0°	8°

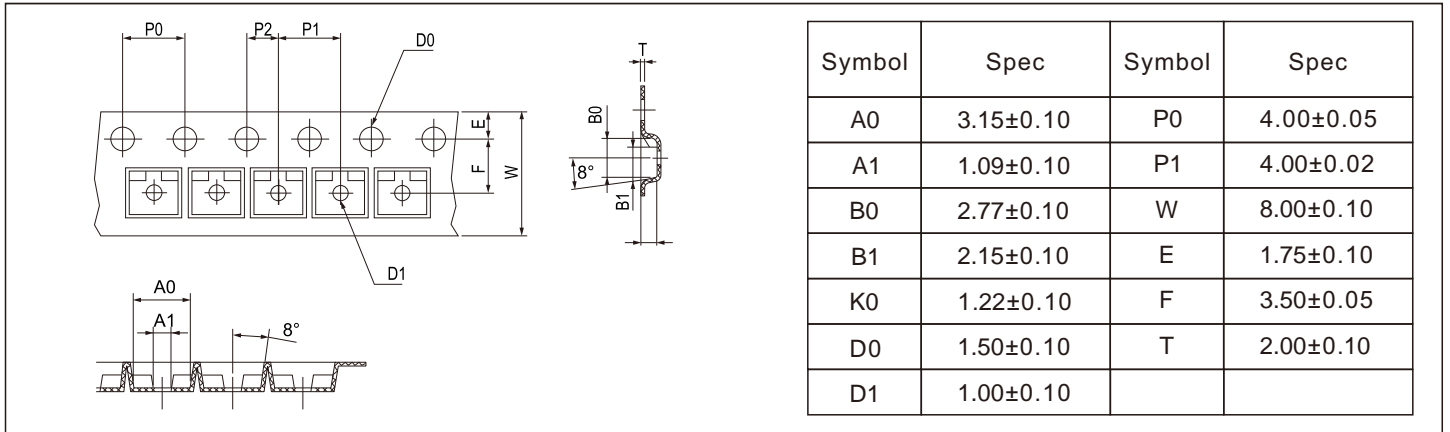
SOT-23 Suggested Pad Layout



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

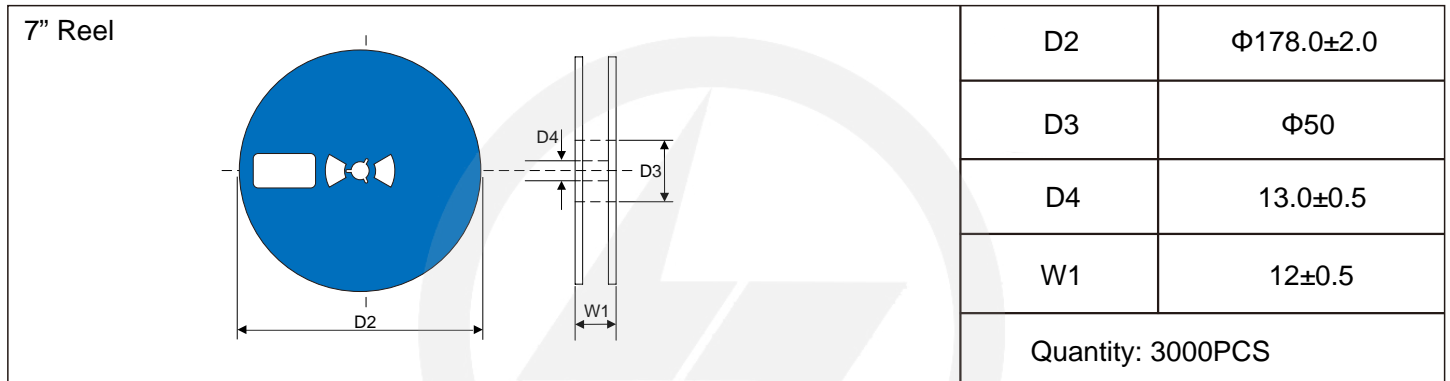
Carrier Tape Dimensions

Unit : mm



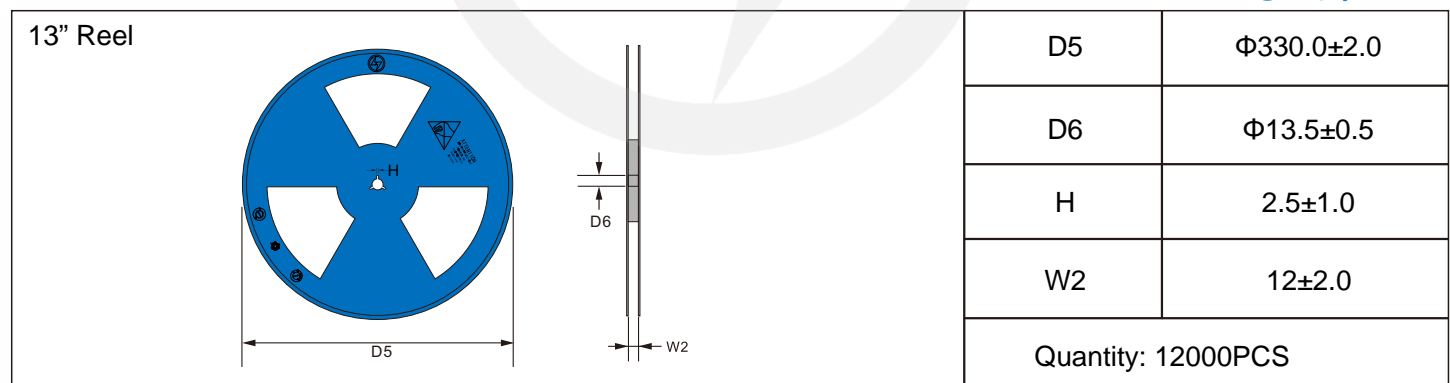
Reel Dimensions

Unit : mm

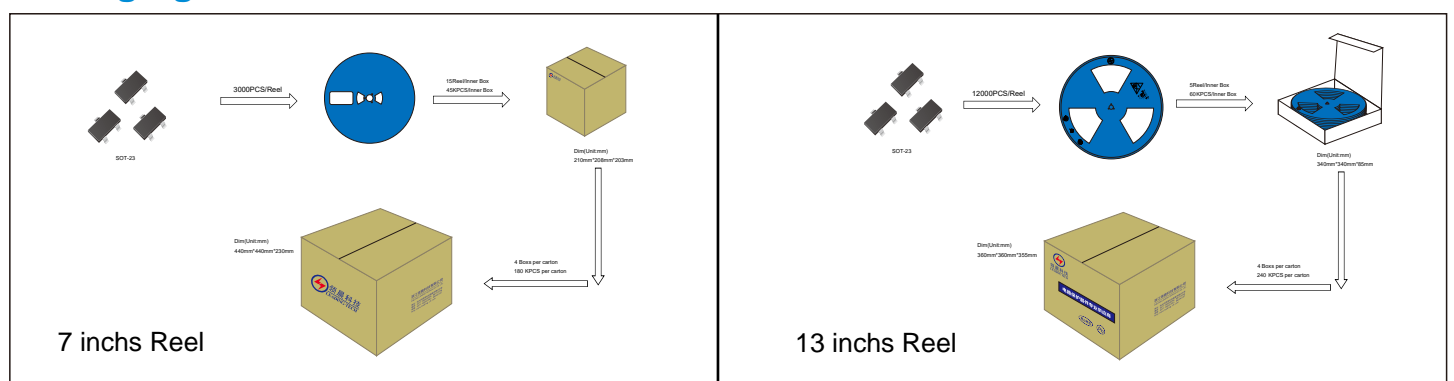


Reel Dimensions

Unit : mm



Packaging





Recommended Soldering Conditions



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat	
-Temperature Min ($T_{S\ min}$)	150°C
-Temperature Max ($T_{S\ max}$)	200°C
-Time (min to max) (t_s)	60-180 seconds
$T_{S\ max}$ to T_L	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
-Temperature (T_L)	217°C
-Time (t_L)	60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

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Version Update Information

Series NO.	Enactment/Revision Date	Effective Date	Version	Revision Content	Revision Reason	Revision Person	Note
01	2024.12.03	2024.12.03	3.0	New file	/	Ding	
02	2026.03.04	2026.03.04	3.1	Package outline E1(max)=2.6mm	/	Ding	