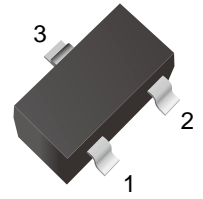


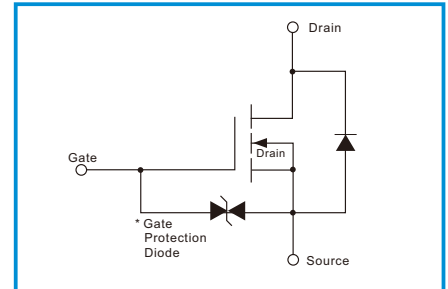
N-Channel MOSFET

Features

- Low On-resistance
- Fast Switching Speed
- Low Voltage Drive Makes This Device Ideal for Portable Equipment
- Easily Designed Drive Circuits
- Easy to Parallel
- RoHS Compliant & Green EMC
- Matte Tin(Sn) Lead Finish
- Weight: approx. 0.002g
- Marking: KN



1. Gate
2. Source
3. Drain

Functional Diagram


Maximum Ratings (Ta=25 unless otherwise noted)

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Continuous Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	100	mA
P_D	Power Dissipation	150	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	833	$^{\circ}C/W$
T_{STG}	Storage Temperature Range	-55 to +150	$^{\circ}C$
T_J	Operating Junction Temperature	+150	$^{\circ}C$

These ratings are limiting values above which the serviceability of the device may be impaired.

Electrical Characteristics (Ta=25 unless otherwise specified)

Off Characteristics

Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=10\mu A$	30			Volts
I_{GSS}	Gate-Body Leakage	$V_{DS}=0V, V_{GS}=\pm 20V$			± 1	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			1	μA

Electrical Characteristics (Ta=25 unless otherwise specified)

On Characteristics

Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
$V_{th(GS)}$	Gate-Threshold Voltage	$V_{DS}=3V, I_D=100\mu A$	0.8		1.5	Volts
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=4V, I_D=10mA$			8	Ω
		$V_{GS}=2.5V, I_D=1mA$			13	Ω
g_{fs}	Forward Trans Conductance	$V_{DS}=3V, I_D=10mA$	20			ms
V_{SD}	Drain-Source Diode Forward Voltage	$I_S=115mA, V_{GS}=0V$			1.2	V

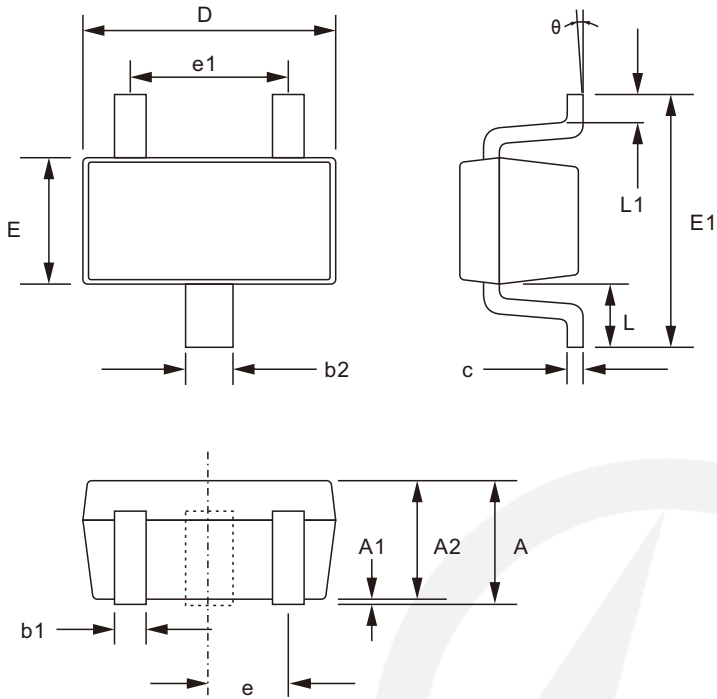
Dynamic Characteristics

Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
C_{iss}	Input Capacitance	$V_{DS}=5V$ $V_{GS}=0V$ $f=1.0MHz$		13		pF
C_{oss}	Output Capacitance			9		pF
C_{rss}	Reverse Transfer Capacitance			4		pF

Switching Characteristics

Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
$t_{D(on)}$	Turn-on Time	$V_{DD}=5V, R_L=500\Omega,$ $I_D=10mA, V_{GS}=5V,$ $R_G=10\Omega$		15		nS
$t_{D(off)}$	Turn-off Time			80		nS

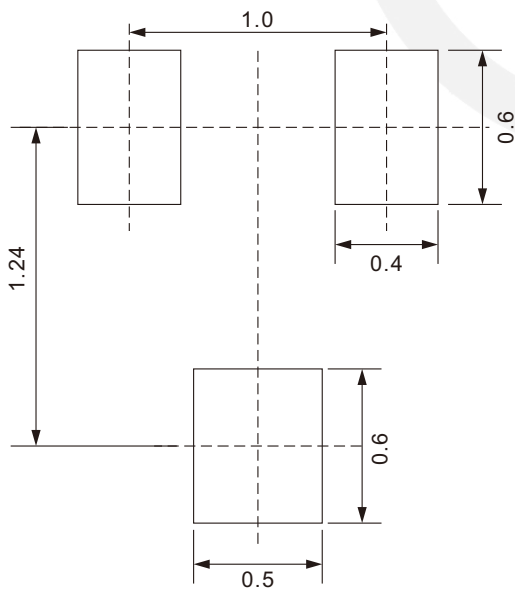
SOT-523 Package Outline

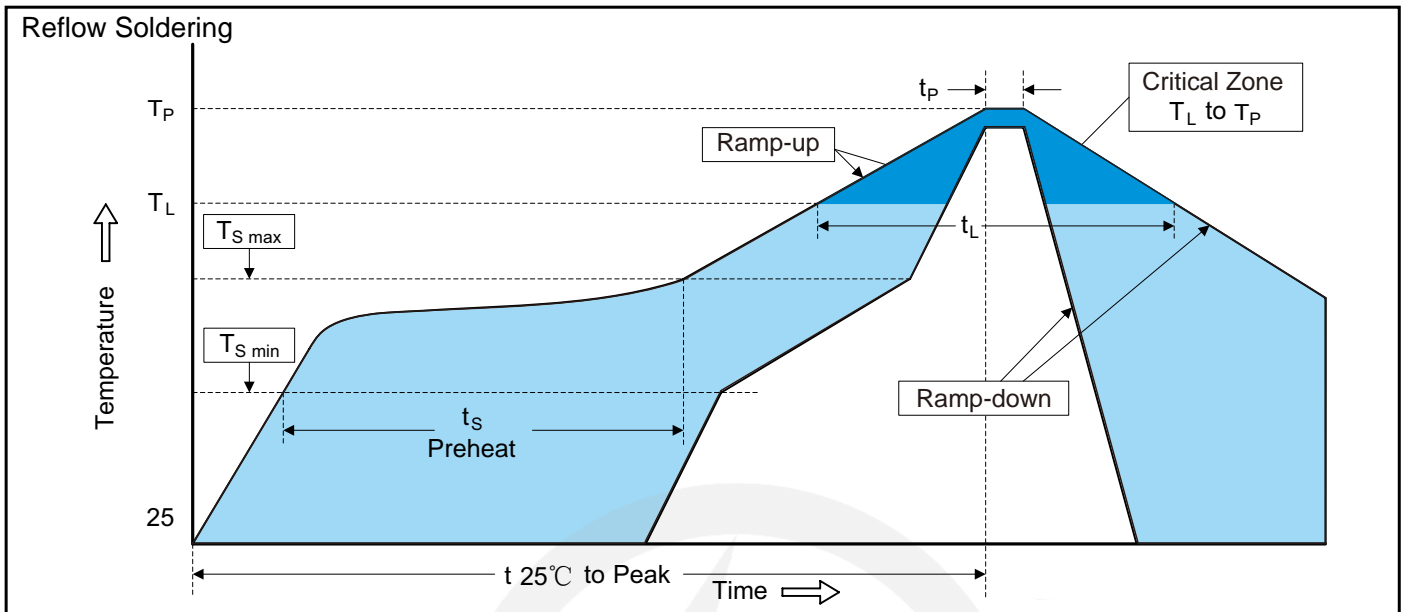


Unit: mm

SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.70	0.90
A1	0.00	0.10
A2	0.70	0.80
b1	0.15	0.25
b2	0.25	0.35
c	0.10	0.20
D	1.50	1.70
E	0.70	0.90
E1	1.45	1.75
e	0.50 TYP.	
e1	0.90	1.10
L	0.40 TYP.	
L1	0.10	0.30
θ	0°	8°

SOT-523 Suggested Pad Layout



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.

7" Reel


D2	$\Phi 178.0 \pm 2.0$
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D3	$\Phi 50.0 \text{ Min.}$
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D4	$\Phi 13.0 \pm 0.5$
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W1	16.0 ± 2.0
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Quantity: 3000PCS