

/ Descriptions

SOT-523 N MOS
N-CHANNEL MOSFET in a SOT-523 Plastic Package.

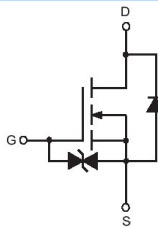
/ Features

Sensitive gate trigger current and Low Holding current.ESD protected,HF Product.

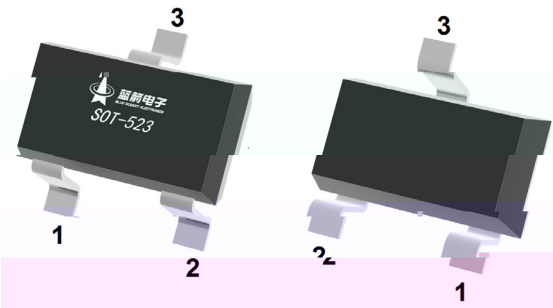
/ Applications

Intended for use in general purpose switching and phase control applications.

/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 S PIN 3 D

/ Marking

Marking	KN
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/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	300	mA
Drain Current – Pulsed	I_{DM}	1200	mA
Power Dissipation	P_D	250	mW
Junction Temperature Range	T_j	150	
Storage Temperature Range	T_{stg}	-55~150	
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	500	$^{\circ}\text{C/W}$

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	V_{DSS}	$V_{GS}=0$ $I_D=250\mu\text{A}$	50			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0$ $V_{DS}=50\text{V}$			1.0	μA
Gate-Source Leakage current	I_{GSS}	$V_{DS}=0\text{V}$ $V_{GS}=\pm 20\text{V}$			± 2	μA
Static Drain-Source On-Resistance	$R_{DS(on)(1)}$	$V_{GS}=10\text{V}$ $I_D=0.3\text{A}$		0.92	2.5	Ω
	$R_{DS(on)(2)}$	$V_{GS}=4.5\text{V}$ $I_D=0.2\text{A}$		0.98	3	Ω
	$R_{DS(on)(3)}$	$V_{GS}=2.5\text{V}$ $I_D=0.01\text{A}$		1.2	4.5	Ω
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}$ $I_S=300\text{mA}$			1.2	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$	0.6	0.9	1.5	V
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$, $f=1\text{MHz}$, $V_{DS}=15\text{V}$		30		pF
Output Capacitance	C_{oss}			5.2		
Reverse Transfer Capacitance	C_{rss}			3.3		
Gate Resistance	R_g	$V_{DS}=0\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		157		Ω
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS}=5\text{V}$, $V_{DD}=5\text{V}$, $R_L=500\Omega$, $R_G=10\Omega$		15		ns
Rise Time	t_r			35		
Turn-Off Delay Time	$t_{d(OFF)}$			80		
Fall Time	t_f			80		

/ Electrical Characteristic Curve

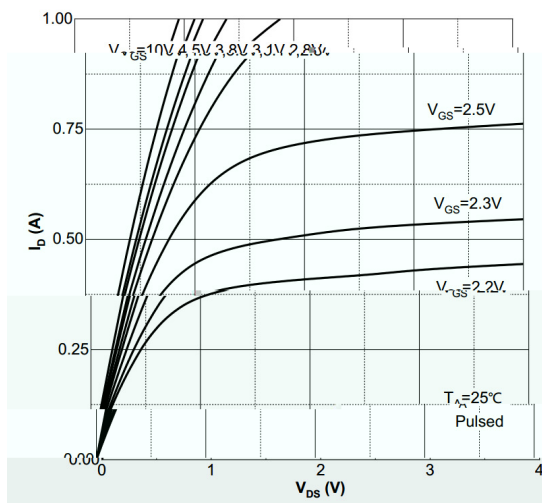


Figure 2 Output characteristics

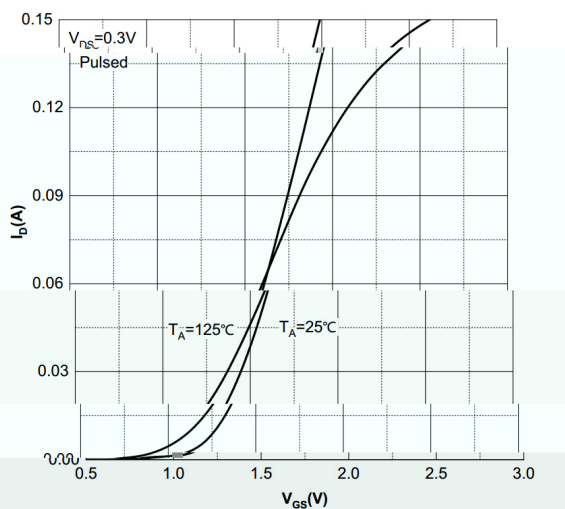


Figure 3 Transfer characteristics

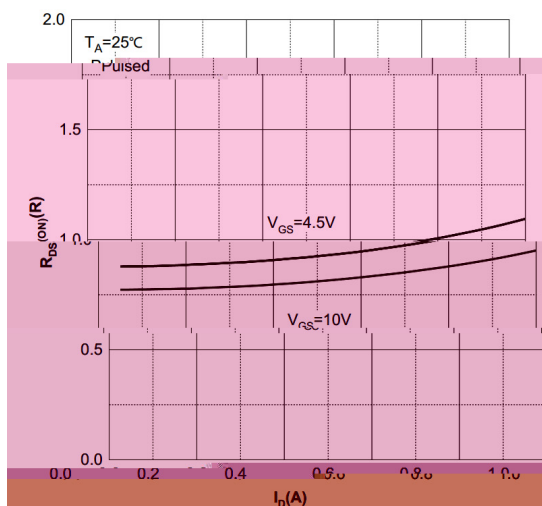


Figure 4 On-Resistance vs. Drain Current

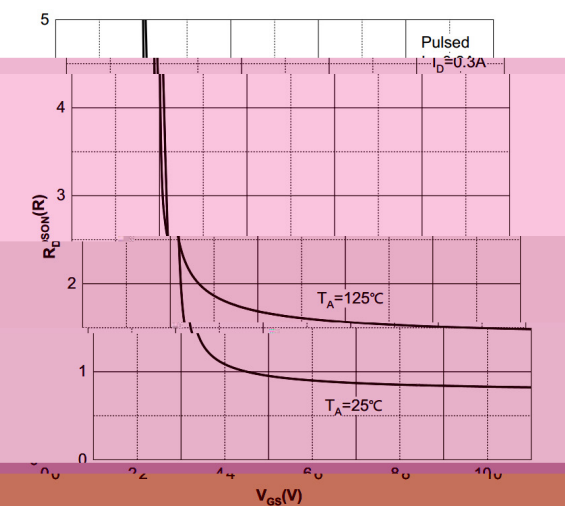


Figure 5 On-Resistance vs. Gate-Source Voltage

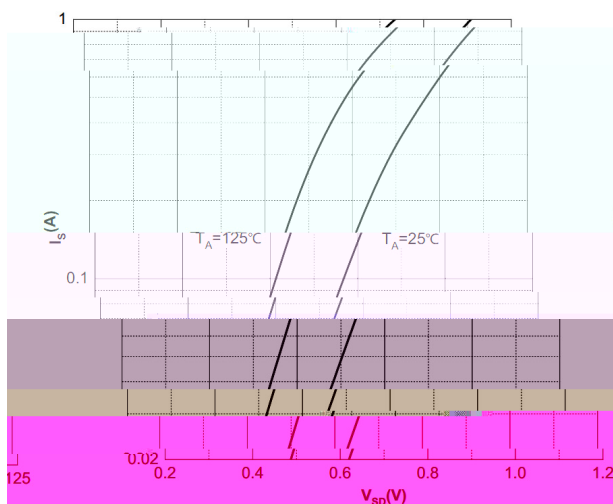


Figure 6 Power Dissipation vs. Temperature

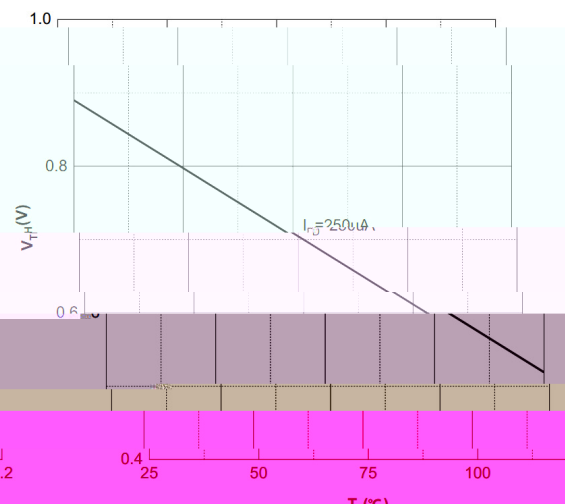


Figure 7 Threshold Voltage

/ Electrical Characteristic Curve

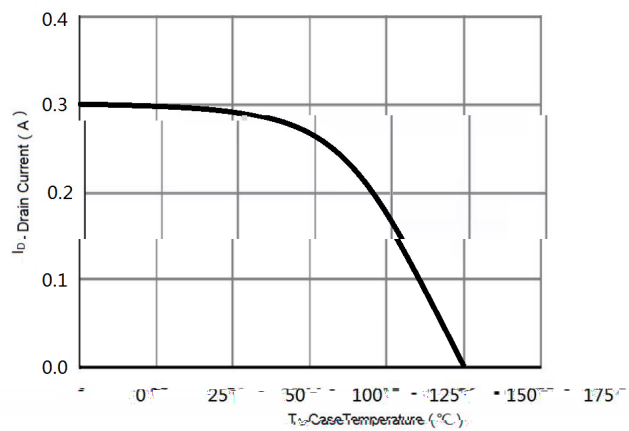
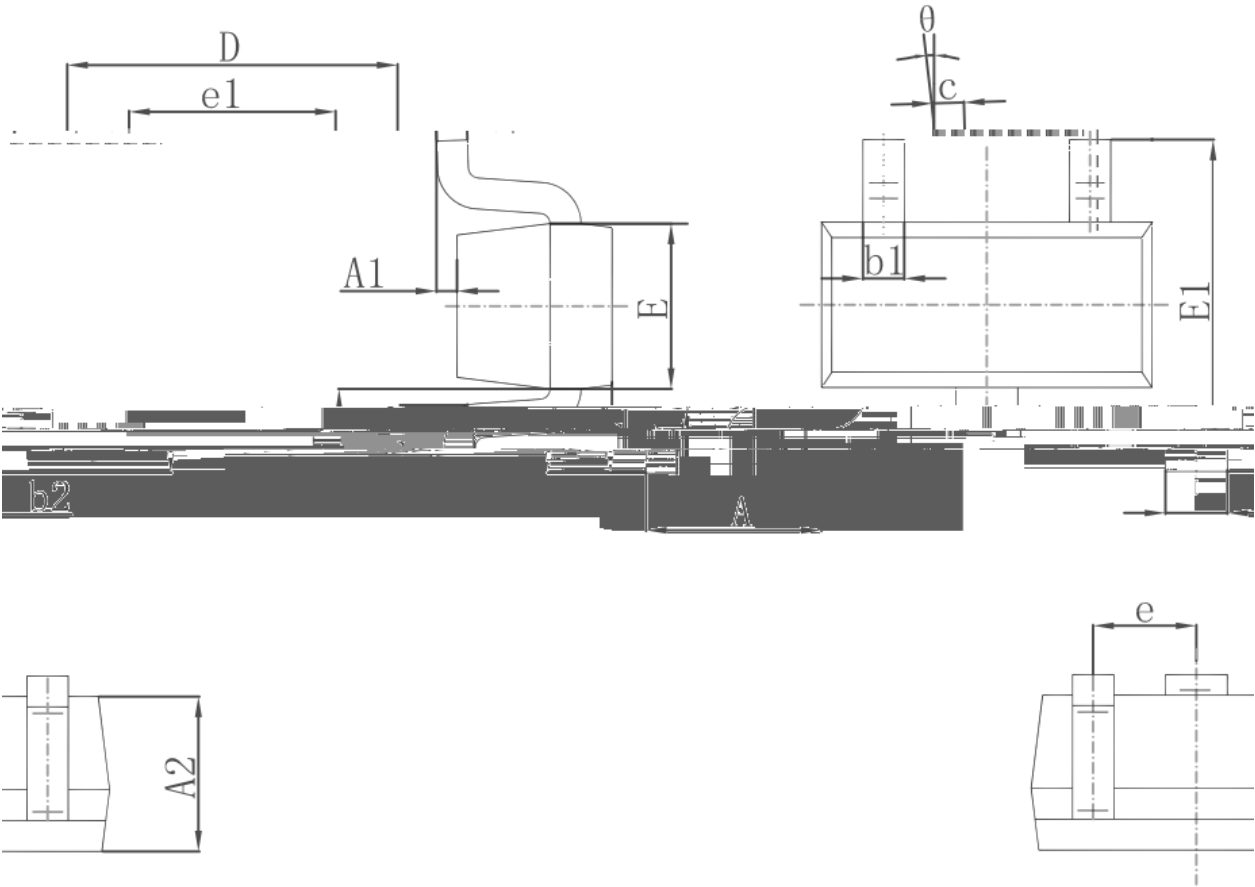


Figure 7 : Current De-rating

/ Package Dimensions

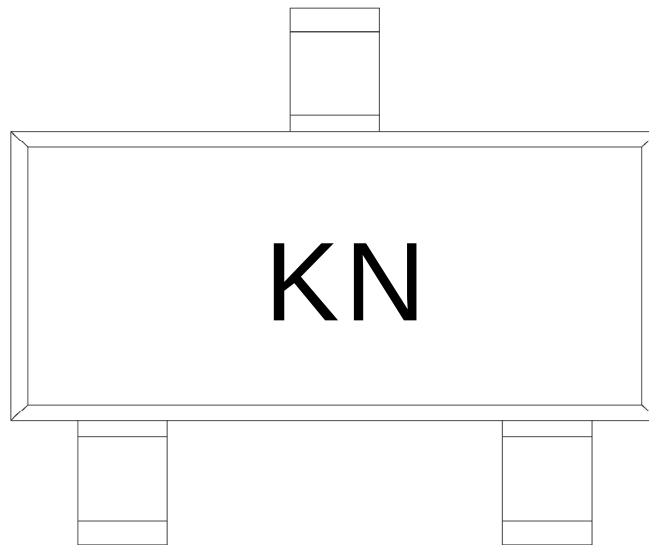


Dimensions In Millimeters		Dimensions In Inches	
Min.	Max.	Min.	Max.
0.700	0.900	0.028	0.035
0.000	0.100	0.000	0.004
0.700	0.800	0.028	0.031
A	1.500	A	0.059
A1	0.700	A1	0.028
A2	0.250	A2	0.010
D	2.000	D	0.079
e1	0.200	e1	0.008
E	0.700	E	0.028
E1	0.750	E1	0.030
e	0.500	e	0.020 TYP.
L	1.000	L	0.039
L1	0.400	L1	0.016 REF.
theta	8°	theta	0.18°

Symbol	Value
A	1.500
A1	0.700
A2	0.250
b1	0.700
b2	0.250
D	2.000
E	0.700
E1	0.750
e	0.500 TYP.
e1	0.200
L	1.000
L1	0.400 REF.
theta	0.18°



/ Marking Instructions

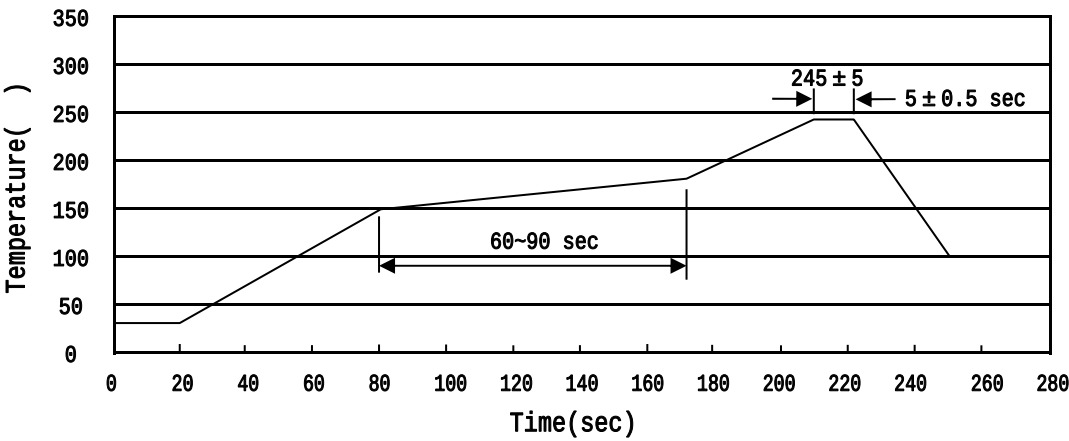


KN

Note:

KN: Product Type Code

() / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- 1

150 180

60 90sec;

1.Preheating:150~180 , Time:60~90sec.
- 2

245±5

5±0.5sec;

2.Peak Temp.:245±5 , Duration:5±0.5sec.
- 3

2 10 /sec.

3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

260±5 10±1 sec. Temp.:260±5 Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension (unit mm ³)		
SOT-523	3,000	10	30,000	6	180,000	7" ×8	180×120×180	390×385×205

/ Notices