ESD protected N-CHANNEL MOSFET

MTNK3N3

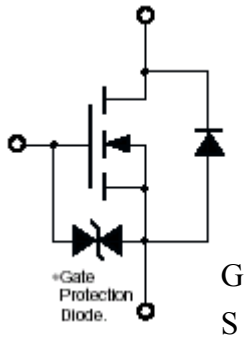
BV_{DSS}	20V
I_D	100mA
R_{DSON}	3Ω

Description

- Low voltage drive, 1.8V
- Easy to use in parallel
- High speed switching
- ESD protected device
- Pb-free package

Symbol

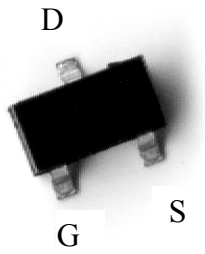
MTNK3N3



G：Gate
S：Source
D：Drain

Outline

SOT-23



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	BV_{DSS}	20	V
Gate-Source Voltage	V_{GS}	±8	V
Continuous Drain Current	I_D	100	mA
Pulsed Drain Current	I_{DM}	400 *1	mA
Total Power Dissipation	P_D	300	mW
ESD susceptibility		350 *2	V
Operating Junction and Storage Temperature Range	Tj	-55~+150	°C
Thermal Resistance, Junction-to-Ambient	Rth,ja	417	°C/W

Note : *1. Pulse Width ≤ 300μs, Duty cycle ≤2%
*2. Human body model, 1.5kΩ in series with 100pF

Electrical Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	20	-	-	V	V_{GS}=0, I_D=100μA
$V_{GS(th)}$	0.5	-	1.0	V	V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	-	-	±1	μA	V_{GS}=±8V, V_{DS}=0
I_{DSS}	-	-	500	nA	V_{DS}=20V, V_{GS}=0
$R_{DS(ON)}$	-	1.7	3	Ω	V_{GS}=4.5V, I_D=100mA
	-	3.5	6		V_{GS}=1.8V, I_D=20mA
G_{FS}	100	-	-	mS	V_{DS}=5V, I_D=100mA
Dynamic					
C_{iss}	-	23	50	pF	V_{DS}=10V, V_{GS}=0, f=1MHz
C_{oss}	-	7.7	25		
C_{rss}	-	5.8	5		
Source-Drain Diode					
*V_{SD}	-	-	1	V	V_{GS}=0V, I_S=10mA

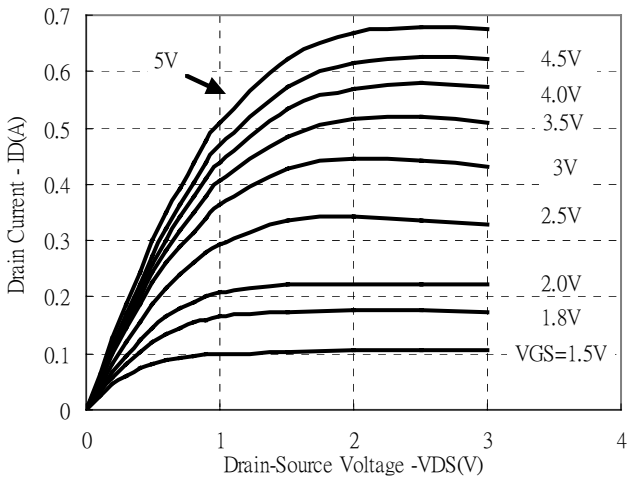
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Ordering Information

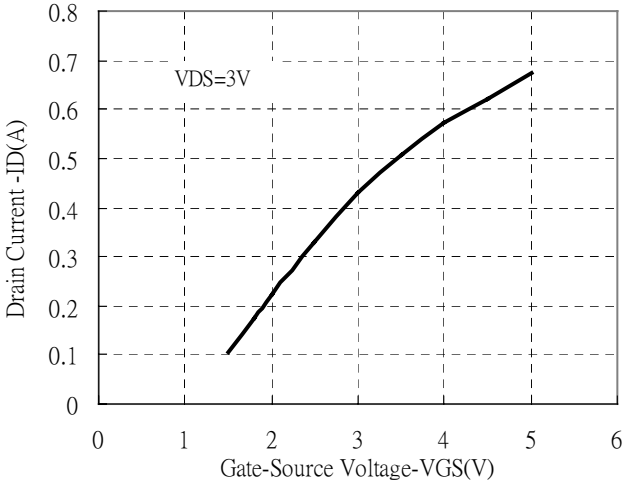
Device	Package	Shipping	Marking
MTNK3N3	SOT-23 (Pb-free)	3000 pcs / Tape & Reel	K3

Typical Characteristics

Typical Output Characteristics

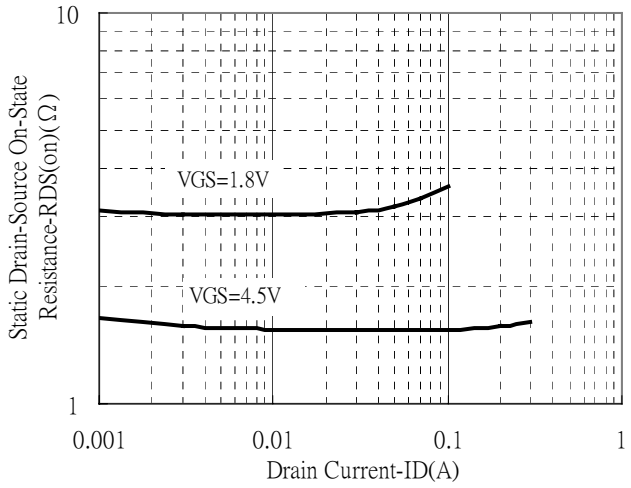


Typical Transfer Characteristics

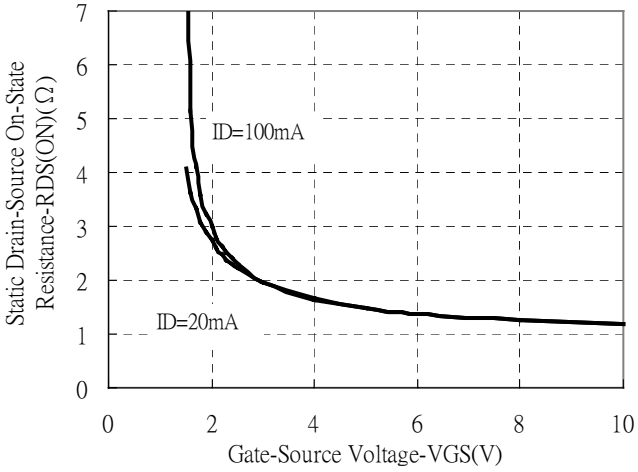


Characteristic Curves(Cont.)

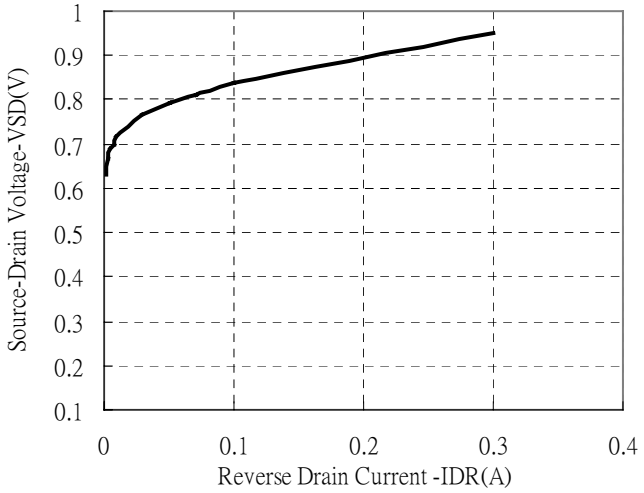
Static Drain-Source On-State resistance vs Drain Current



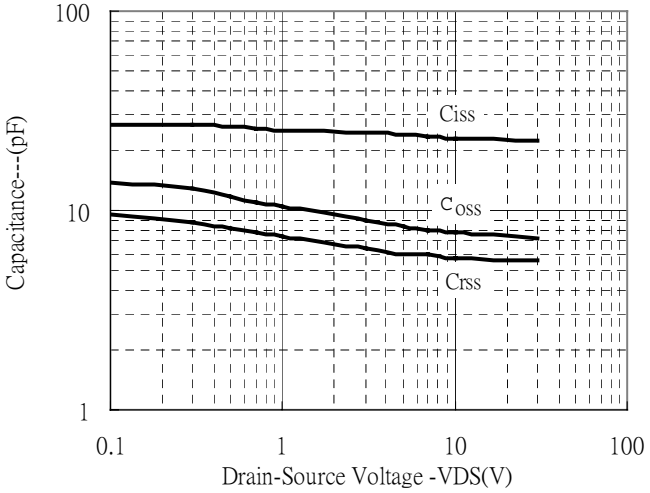
Static Drain-Source On-State Resistance vs Gate-Source Voltage



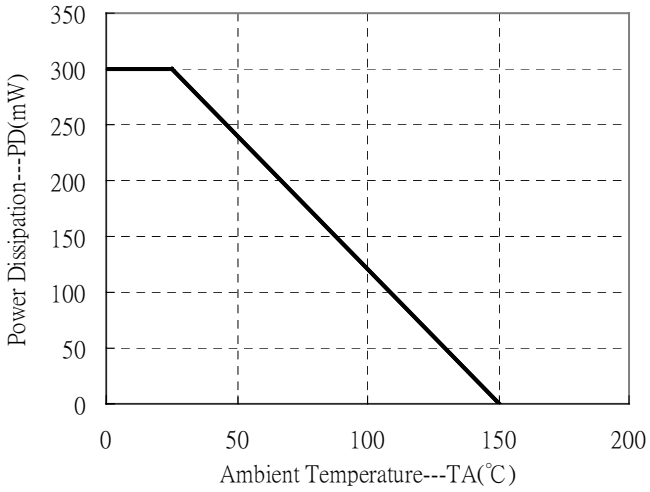
Reverse Drain Current vs Source-Drain Voltage



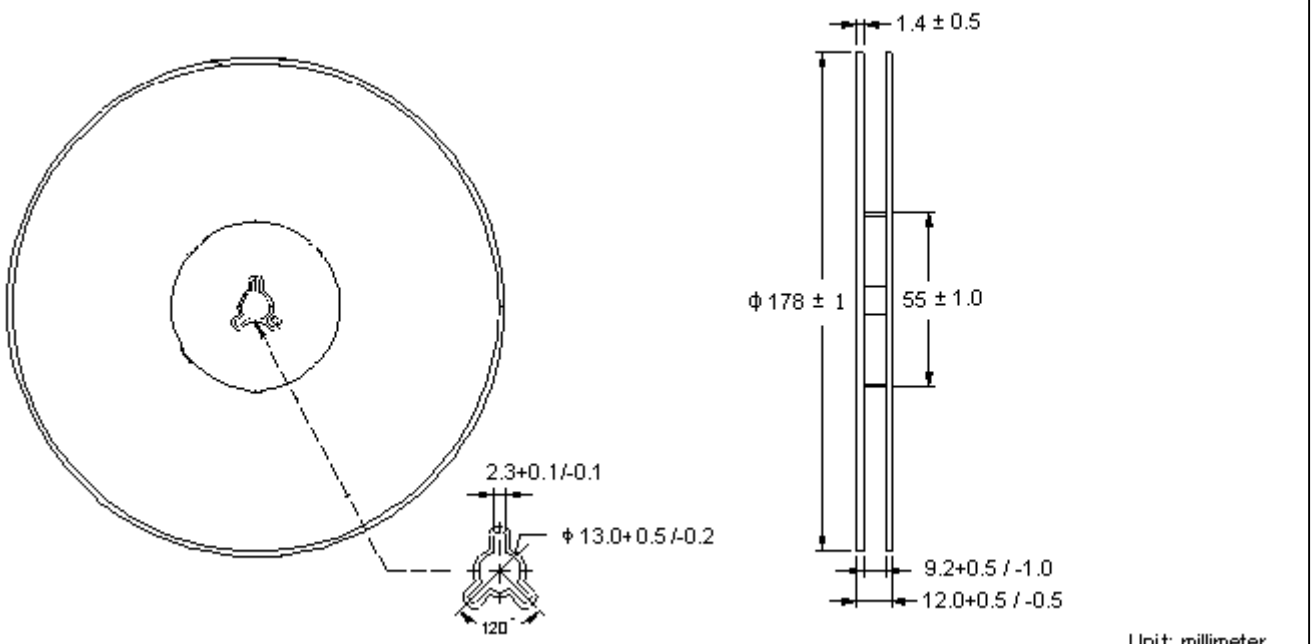
Capacitance vs Drain-to-Source Voltage



Power Derating Curve

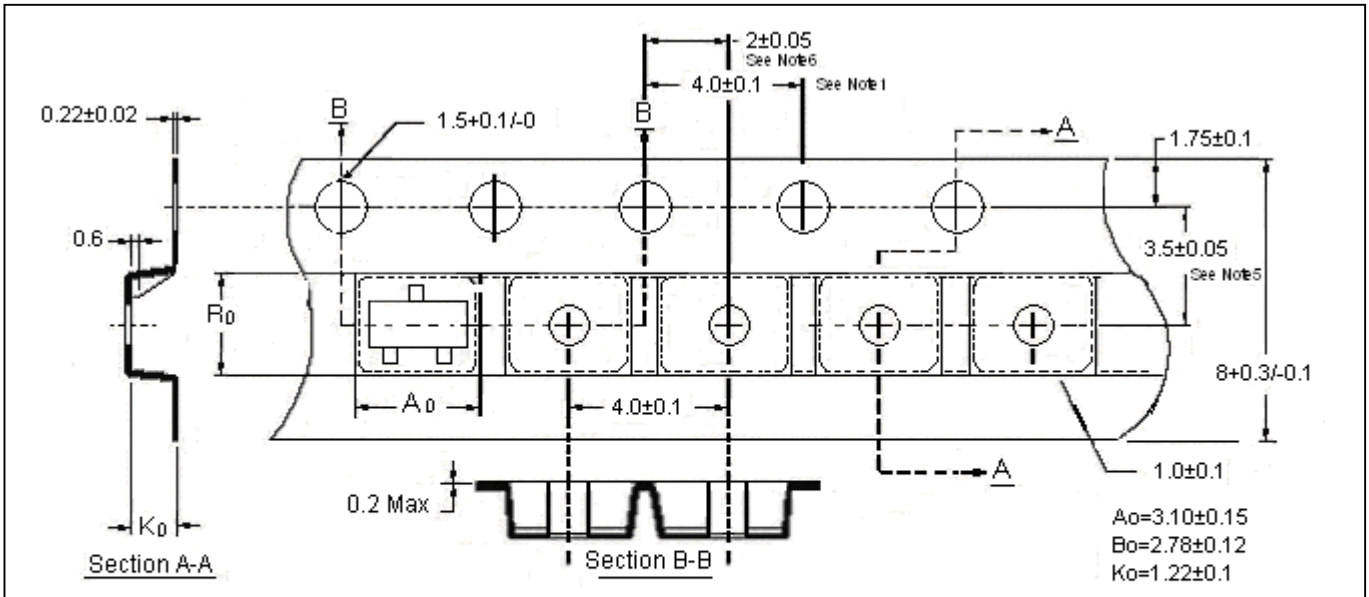


Reel Dimension



Unit: millimeter

Carrier Tape Dimension



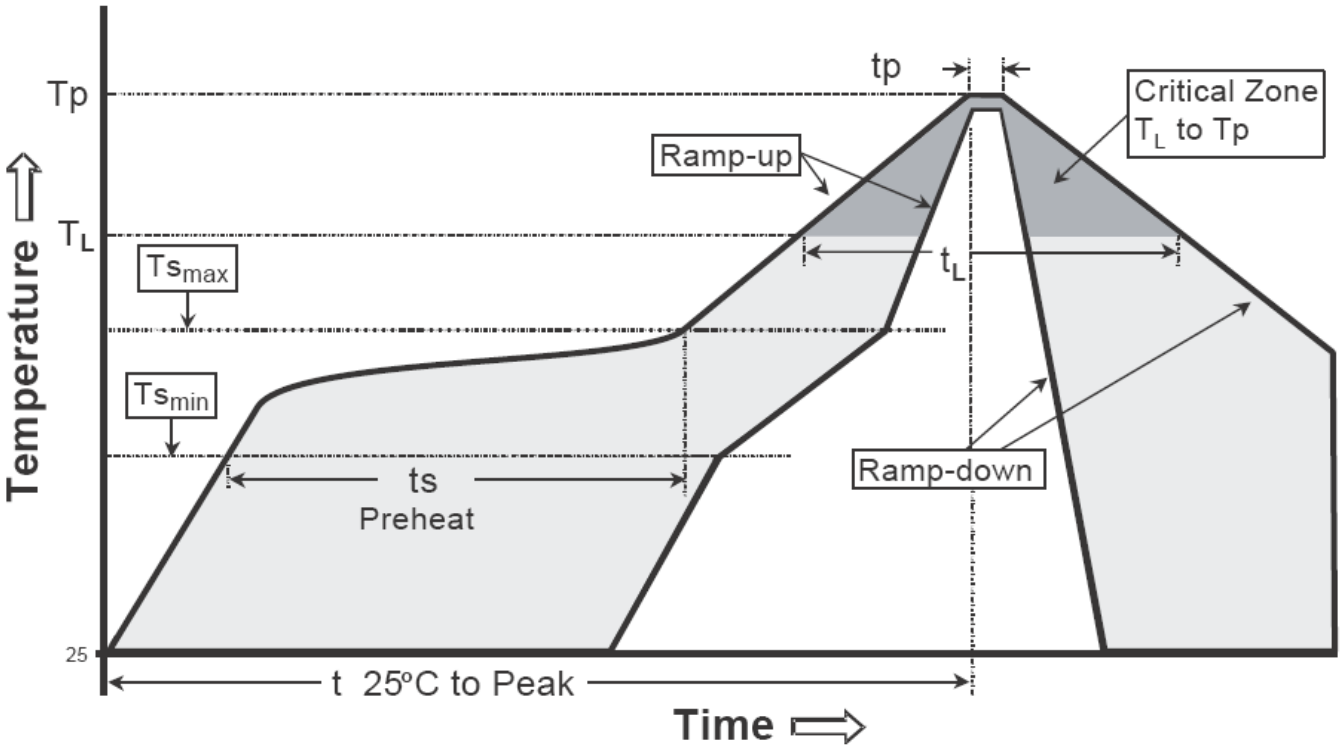
Notes:
1. 10 sprocket hole pitch cumulative tolerance ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

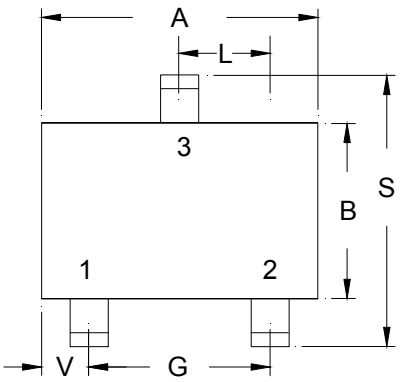
Recommended temperature profile for IR reflow

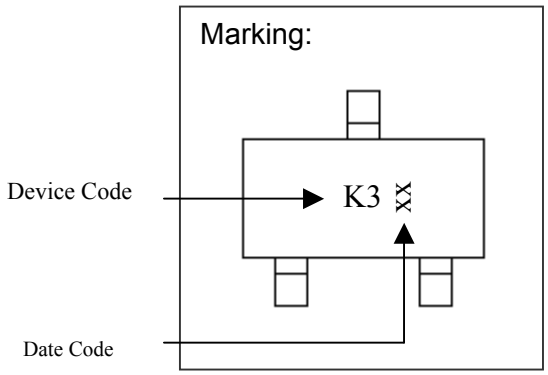


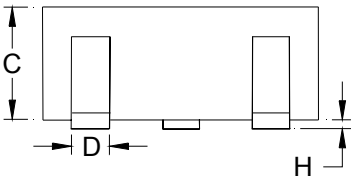
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time($t_{s\ min}$ to $t_{s\ max}$)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − Time (t_L)	 183°C 60-150 seconds	 217°C 60-150 seconds
Peak Temperature(T_P)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

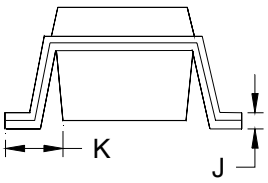
Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-23 Dimension









3-Lead SOT-23 Plastic
Surface Mounted Package
CYStek Package Code: N3

Style : Pin 1.Gate 2.Source 3.Drain

*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0034	0.0070	0.085	0.177
B	0.0472	0.0630	1.20	1.60	K	0.0128	0.0266	0.32	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1083	2.10	2.75
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0005	0.0040	0.013	0.10					

Notes : 1.Controlling dimension : millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material :

- Lead : Pure tin plated.
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0.

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