N-Channel Enhancement Mode MOSFET

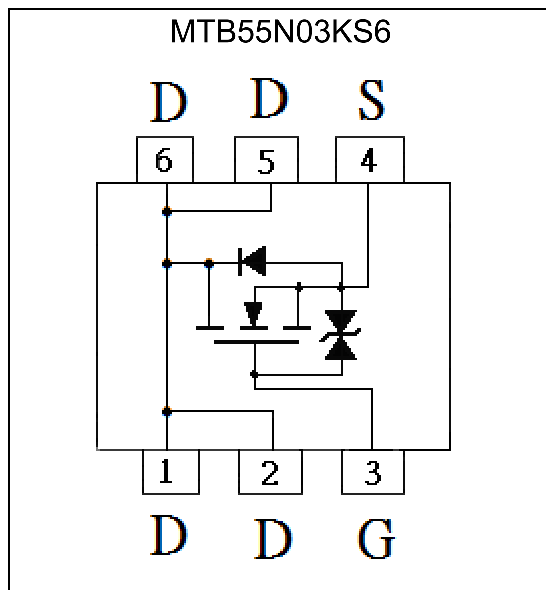
MTB55N03KS6

BV_{DSS}	30V
I_D@V_{GS}=10V, T_A=25°C	2.3A
R_{DSON}@V_{GS}=10V, I_D=2A	65mΩ(typ)
R_{DSON}@V_{GS}=4.5V, I_D=1.7A	80mΩ(typ)

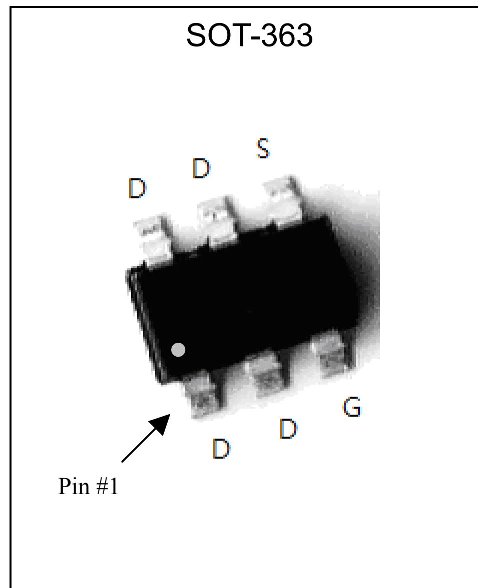
Features

- Low on-resistance
- High speed switching
- ESD protected gate
- Pb-free lead plating and halogen-free package

Equivalent Circuit

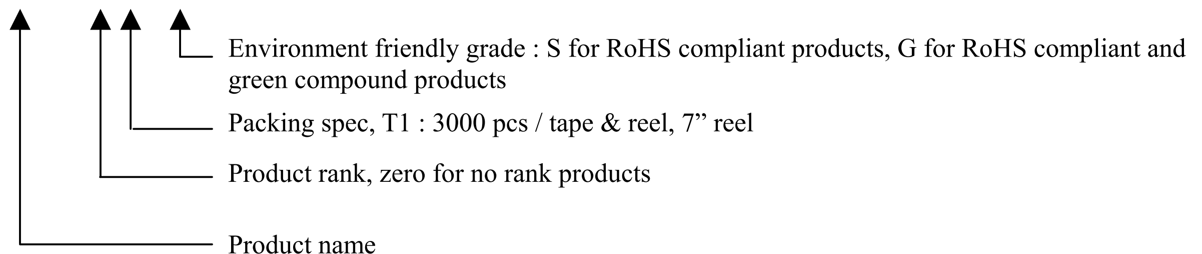


Outline



Ordering Information

Device	Package	Shipping
MTB55N03KS6-0-T1-G	SOT-363 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current @ T_A=25°C, V_{GS}=10V (Note 3)	I_D	2.3	A
Continuous Drain Current @ T_A=70°C, V_{GS}=10V (Note 3)		1.8	
Pulsed Drain Current (Notes 1, 2)	I_{DM}	14	
Maximum Power Dissipation (Note 3)	P_D	750	mW
Maximum Power Dissipation (Note 4)		480	
Operating Junction and Storage Temperature	Tj, Tstg	-55~+150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	120	°C/W
Thermal Resistance, Junction-to-Ambient (Note 3)	$R_{\theta JA}$	167	
Thermal Resistance, Junction-to-Ambient (Note 4)		260	

Note : 1. Pulse width limited by maximum junction temperature.
2. Pulse width≤ 300μs, duty cycle≤2%.
3. Surface mounted on a 1 in² pad of 2 oz. copper.
4. Surface mounted on a minimum pad.

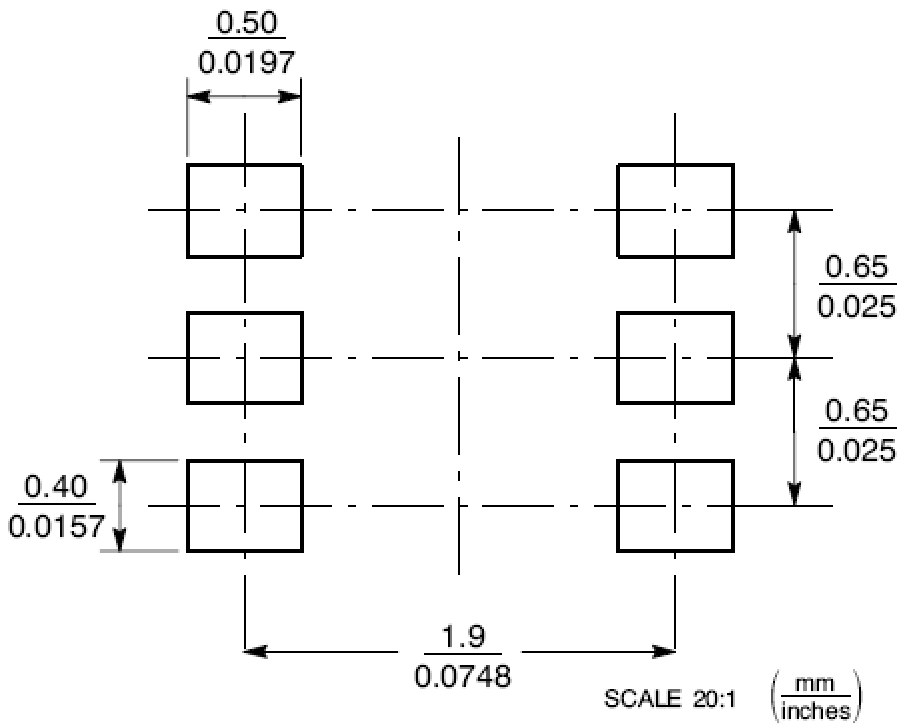
Electrical Characteristics (Tj=25°C, unless otherwise noted)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	30	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	1	-	2.5		V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	-	-	±10	μA	V_{GS}=±16V, V_{DS}=0V
I_{DSS}	-	-	1		V_{DS}=24V, V_{GS}=0V
	-	-	5		V_{DS}=24V, V_{GS}=0V @Tj=55°C
*$R_{DS(ON)}$	-	65	115	mΩ	V_{GS}=10V, I_D=2A
	-	80	155		V_{GS}=4.5V, I_D=1.7A
*G_{FS}	-	3.3	-	S	V_{DS}=5V, I_D=1A
Dynamic					
Ciss	-	166	-	pF	V_{DS}=15V, V_{GS}=0V, f=1MHz
Coss	-	50	-		
Crss	-	32	-		
$t_{d(ON)}$	-	3.6	-	ns	V_{DS}=15V, I_D=1A, V_{GS}=10V, R_G=6Ω
t_r	-	15	-		
$t_{d(OFF)}$	-	10.4	-		
t_f	-	4.6	-		

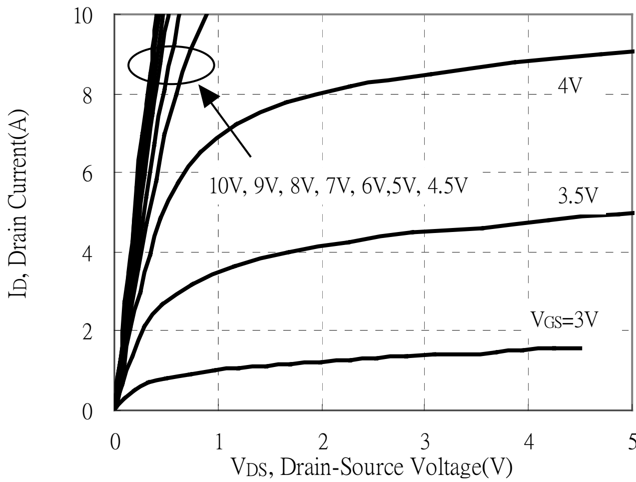
Qg	-	2.8	-	nC	V_{DS}=15V, I_D=2A, V_{GS}=5V
Qgs	-	0.9	-		
Qgd	-	0.9	-		
Source-Drain Diode					
*V_{SD}	-	0.75	1.2	V	V_{GS}=0V, I_S=0.42A
*trr	-	7	-	ns	I_F=1A, dI_F/dt=100A/μs
*Qrr	-	2	-	nC	

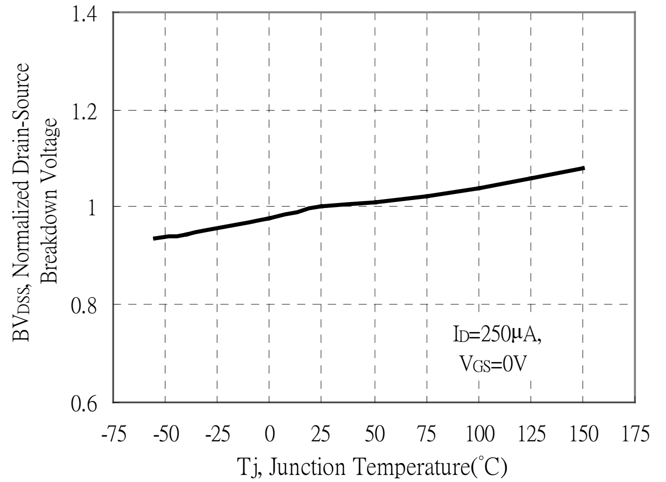
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

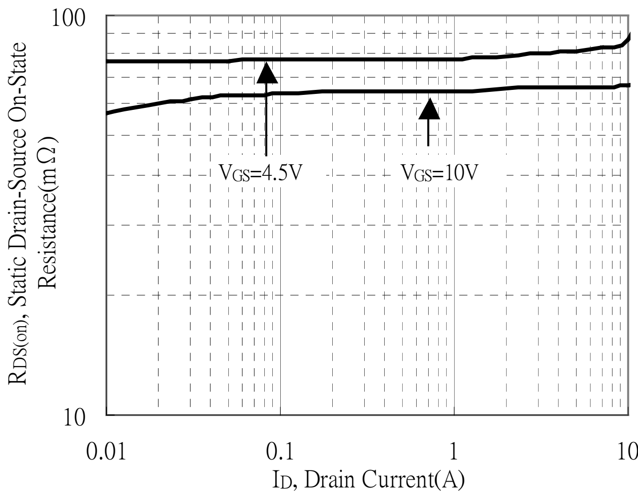
Recommended Soldering Footprint

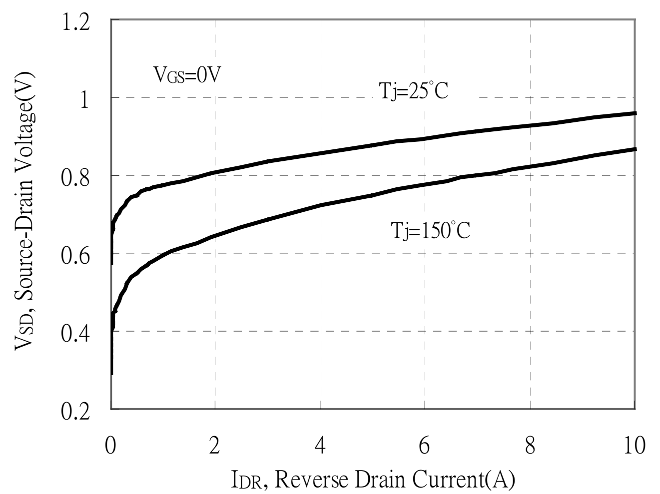


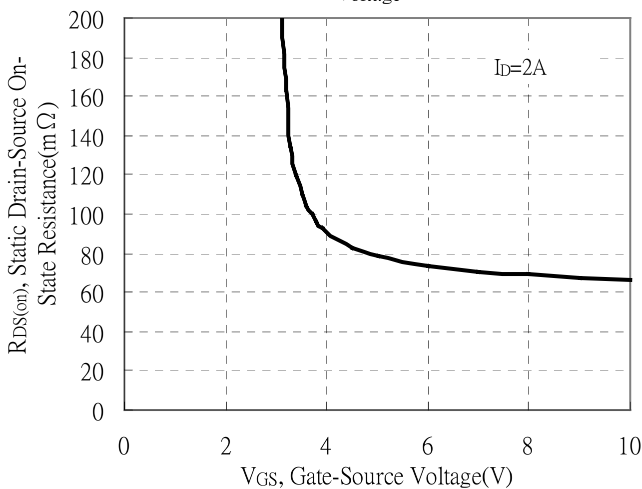
Typical Characteristics

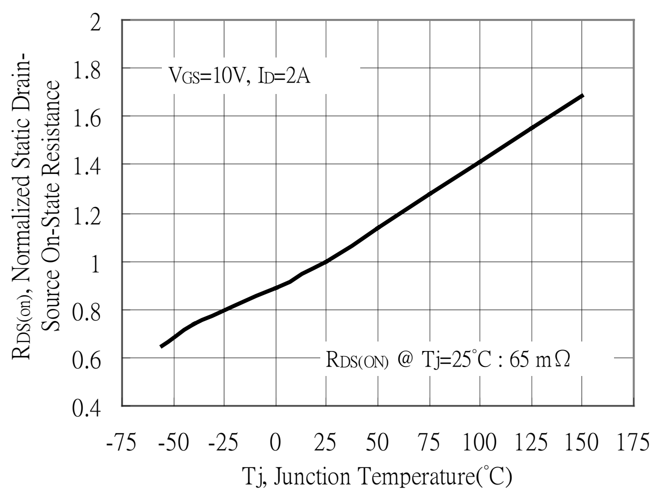




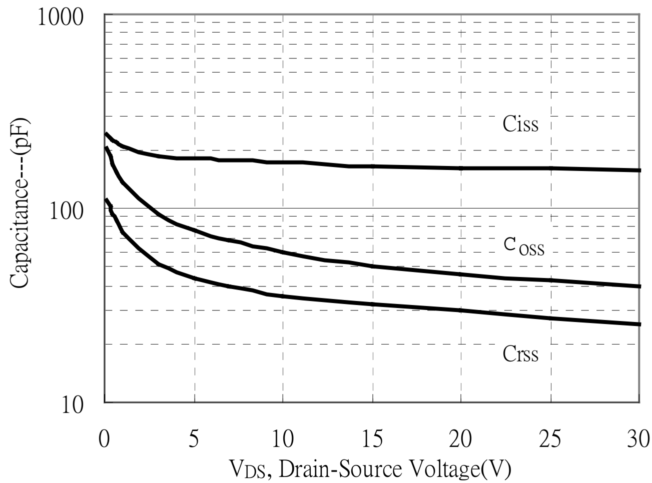


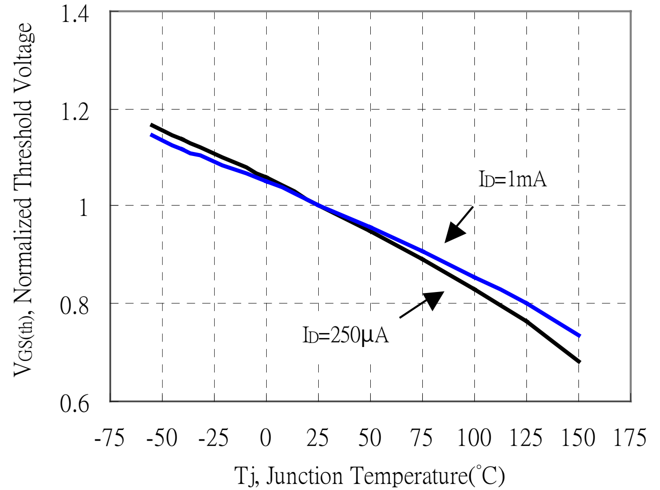


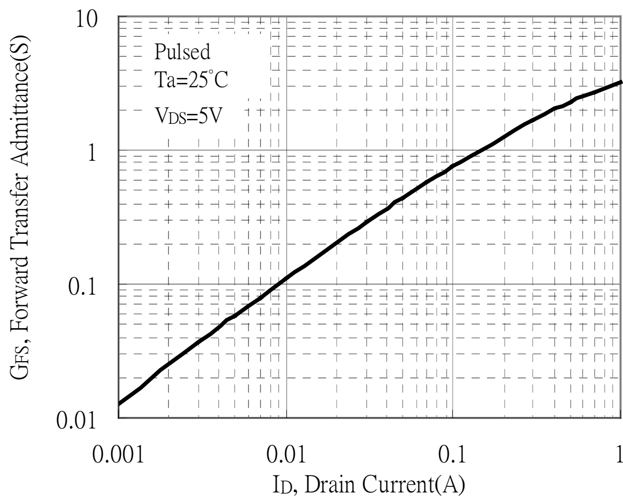


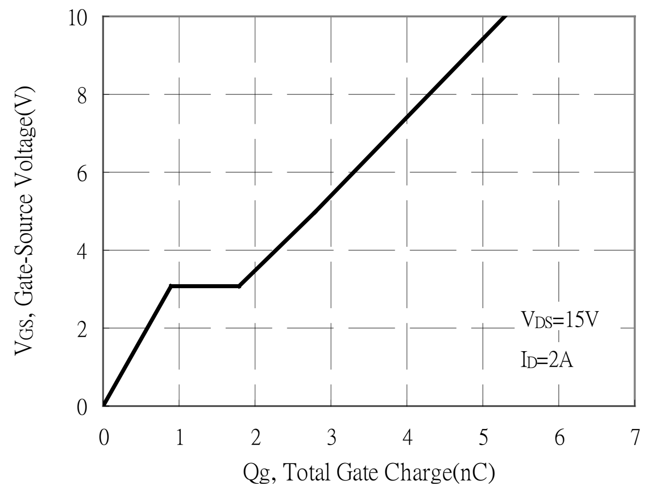


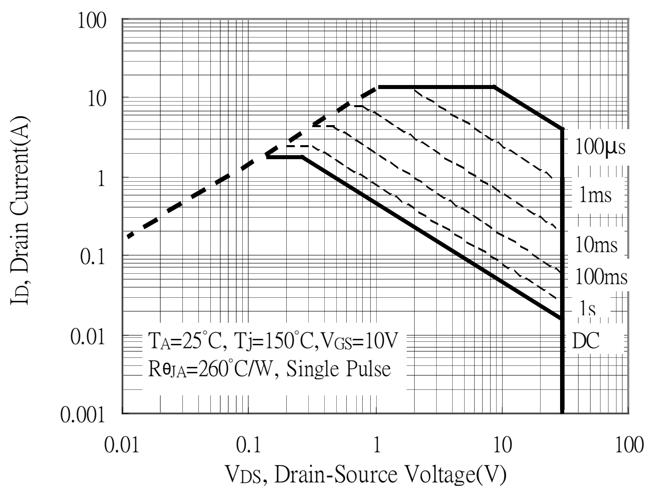
Typical Characteristics(Cont.)

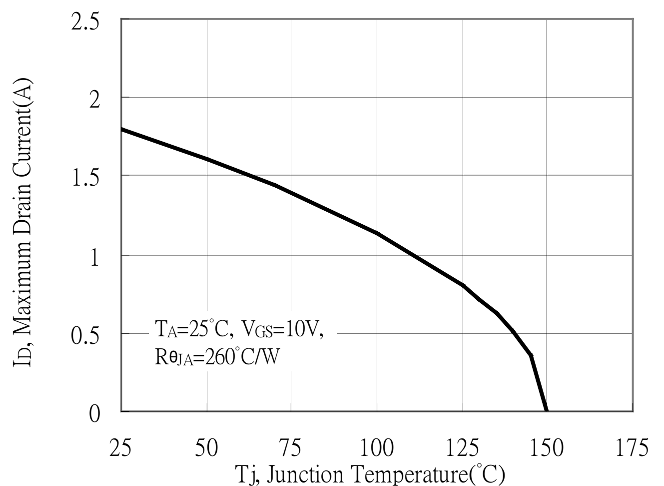




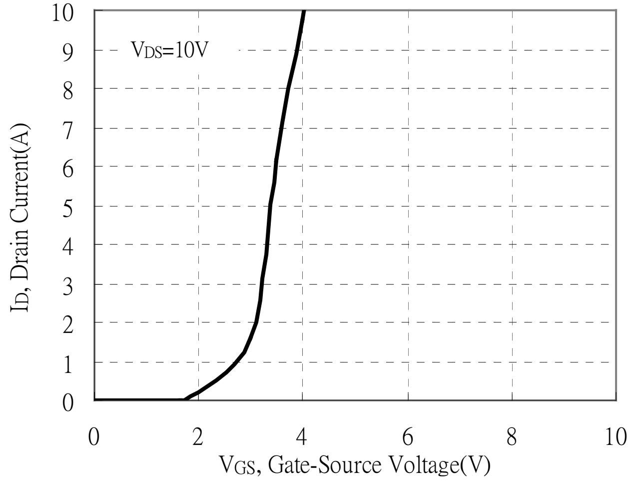


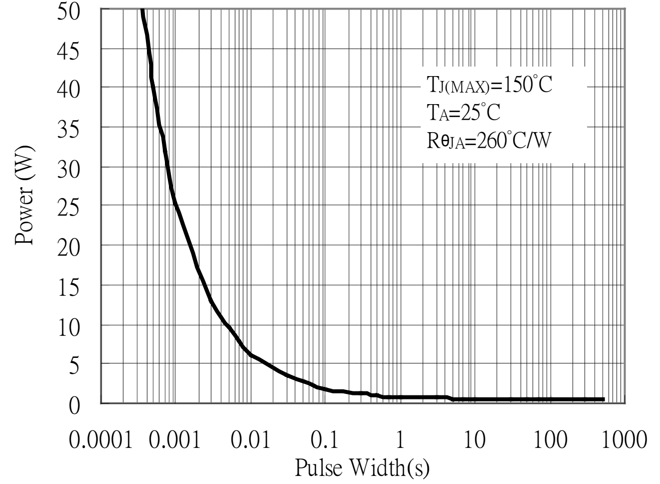


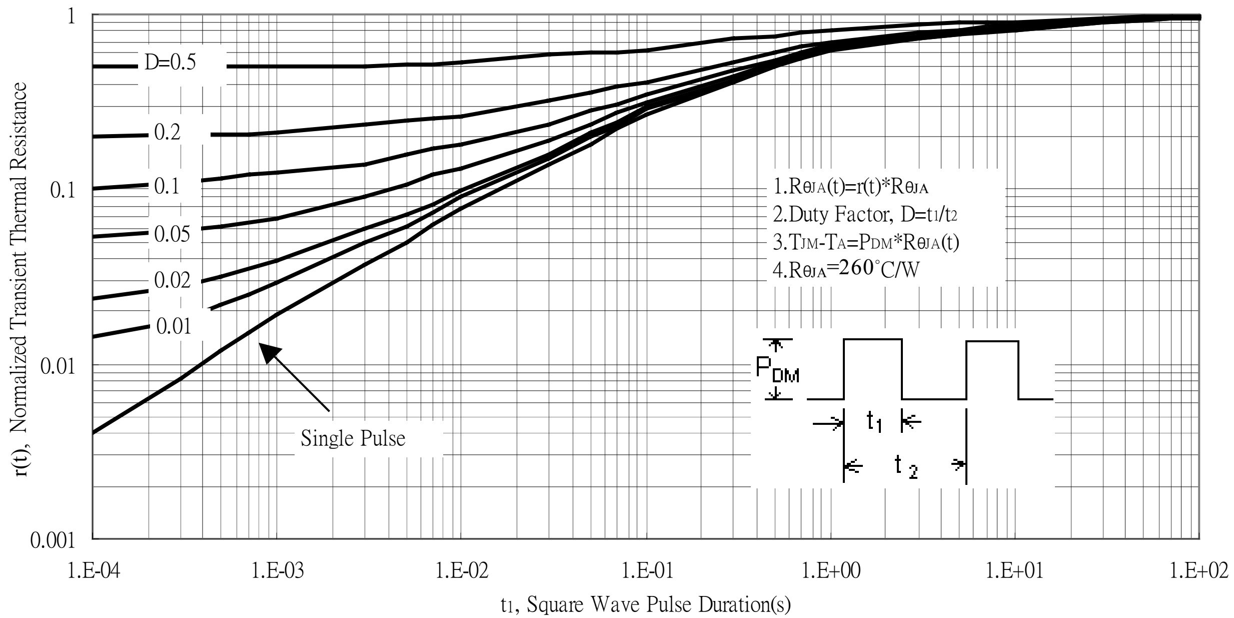




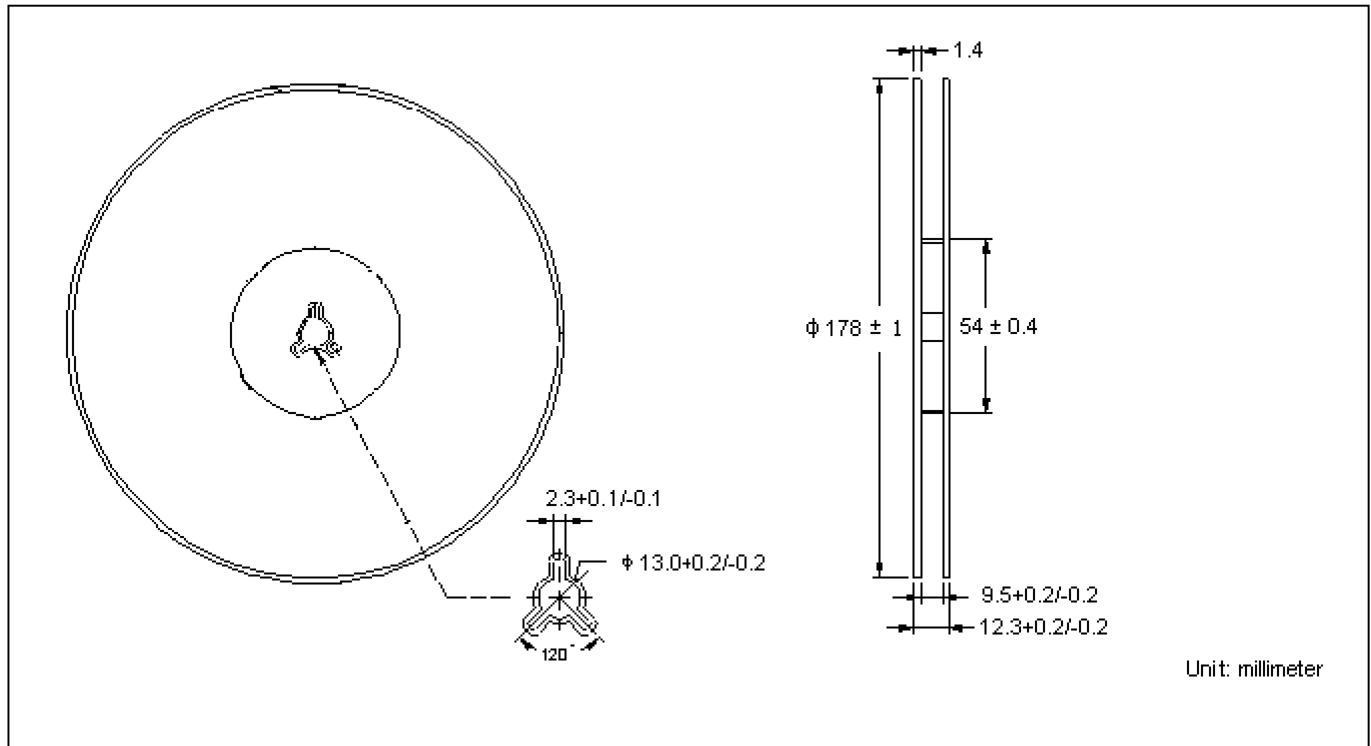
Typical Characteristics(Cont.)



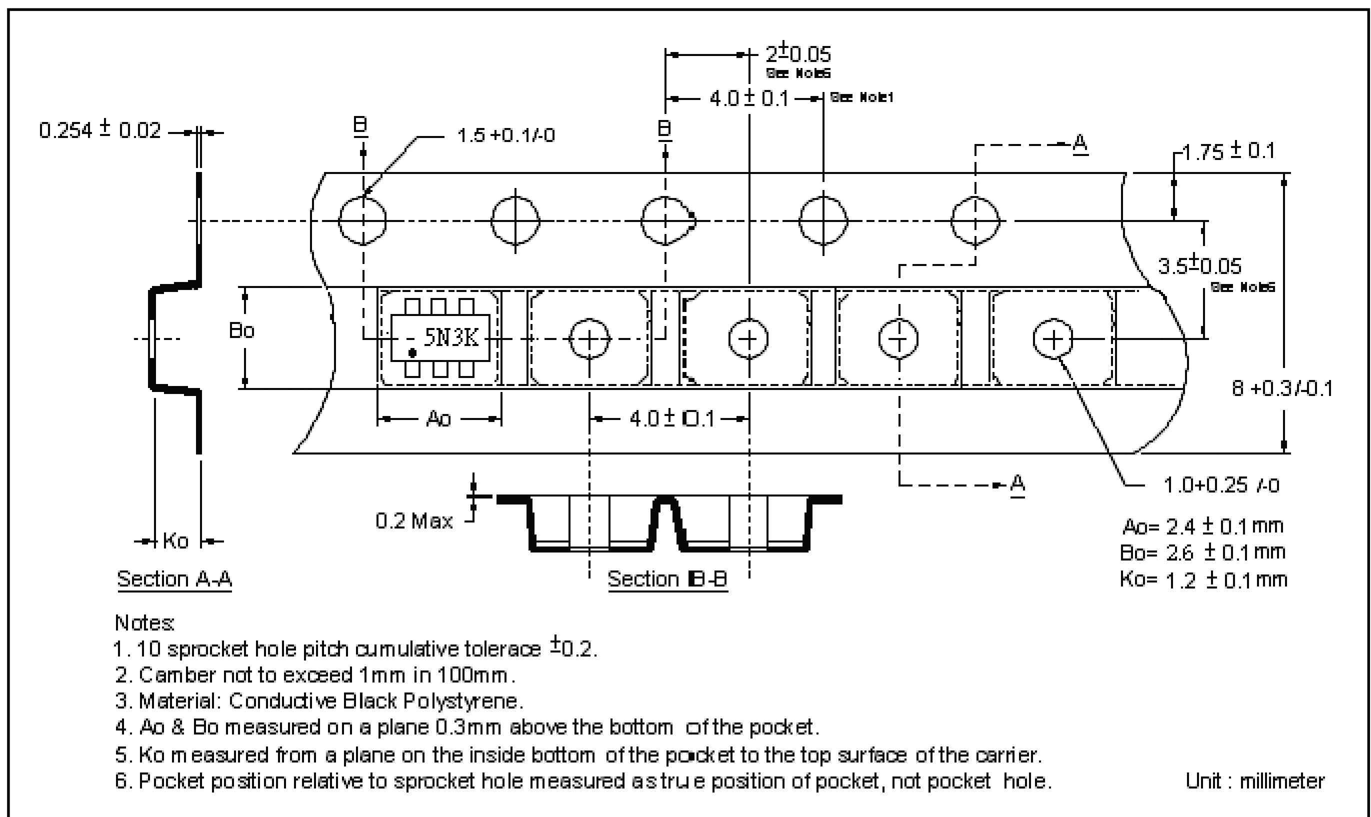




Reel Dimension



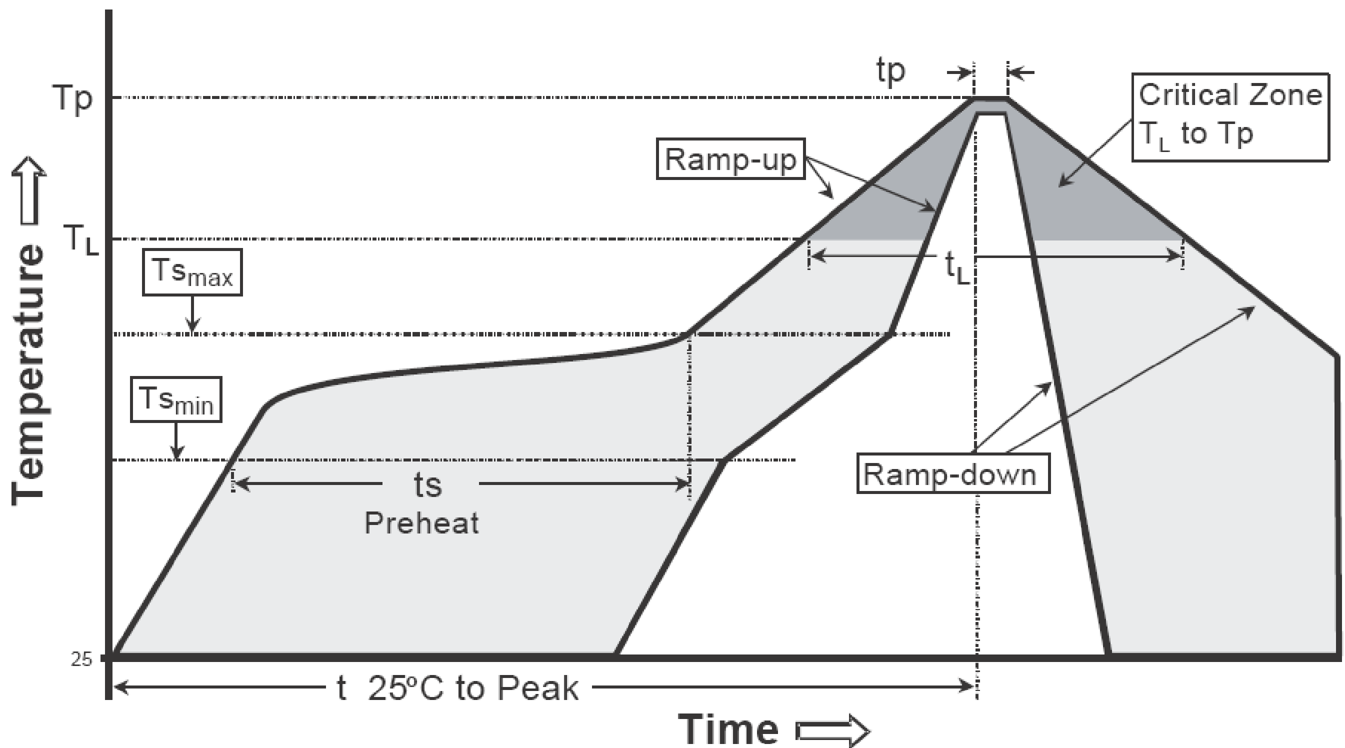
Carrier Tape Dimension



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

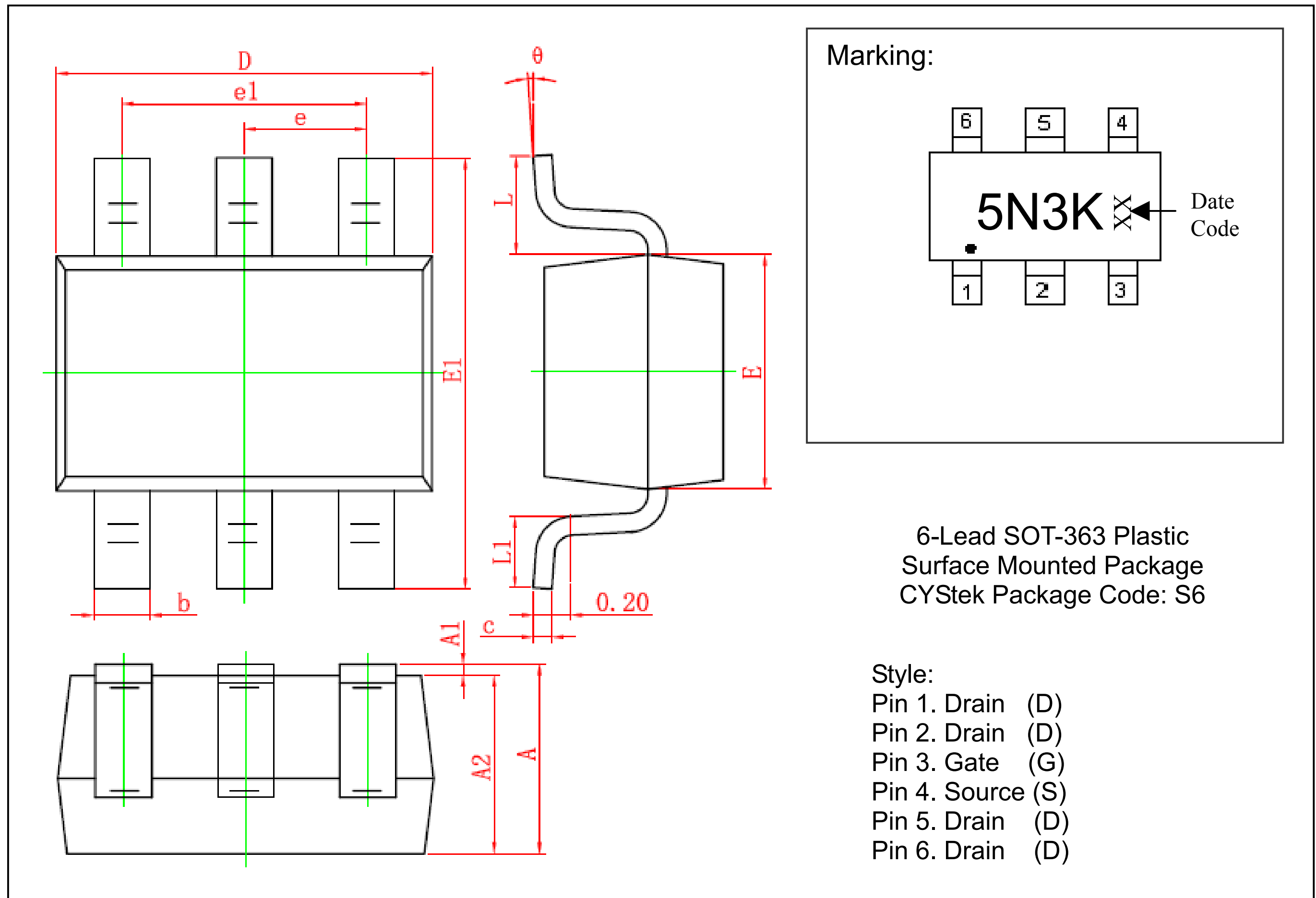


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − 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 :1. All temperatures refer to topside of the package, measured on the package body surface.

2.For devices mounted on FR-4 PCB of 1.6mm or equivalent grade PCB. If other grade PCB is used, care should be taken to match the coefficients of thermal expansion between components and PCB. If they are not matched well, the solder joints may crack or the bodies of the parts may crack or shatter as the assembly cools.

SOT-363 Dimension



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043	E1	2.150	2.450	0.085	0.096
A1	0.000	0.100	0.000	0.004	e	0.650	TYP	0.026	TYP
A2	0.900	1.000	0.035	0.039	e1	1.200	1.400	0.047	0.055
b	0.150	0.350	0.006	0.014	L	0.525	REF	0.021	REF
c	0.080	0.150	0.003	0.006	L1	0.260	0.460	0.010	0.018
D	2.000	2.200	0.079	0.087	θ	0°	8°	0°	8°
E	1.150	1.350	0.045	0.053					

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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