

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

MTN3434G6

BV_{DSS}	30V
I_D	6.1A
R_{DSON}	34m Ω

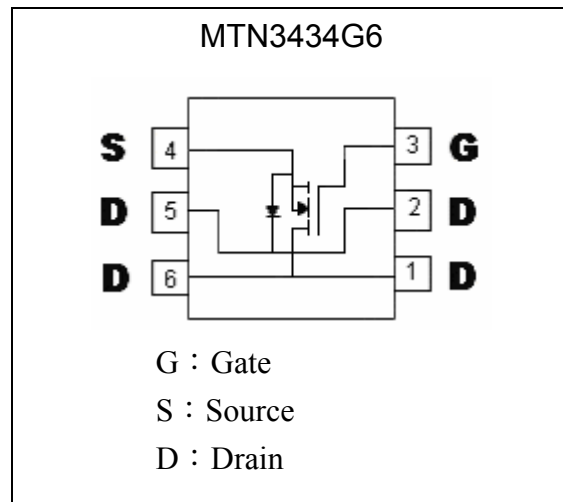
Description

The MTN3434G6 is a N-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TSOP-6 package is universally preferred for all commercial-industrial surface mount applications.

Features

- Simple drive requirement
- Low on-resistance
- Capable of 2.5V gate drive
- Pb-free lead plating package

Equivalent Circuit



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current @ $V_{GS}=4.5V$, $T_A=25^\circ C$ (Note 1)	I_D	6.1	A
Continuous Drain Current @ $V_{GS}=4.5V$, $T_A=70^\circ C$ (Note 1)	I_D	4.9	A
Pulsed Drain Current (Note 2, 3)	I_{DM}	30	A
Total Power Dissipation @ $T_A=25^\circ C$ Linear Derating Factor	P_D	1.14	W
		0.01	W / °C
Operating Junction and Storage Temperature Range	$T_j ; T_{stg}$	-55~+150	°C
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{th,ja}$	110	°C/W

- Note : 1.Surface mounted on 1 in² copper pad of FR-4 board, $t \leq 5s$. 180°C/W when mounted on minimum copper pad.
 2.Pulse width limited by maximum junction temperature.
 3.Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$



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)}	0.6	-	-	V	V _{DS} =V _{GS} , I _D =1mA
I _{GSS}	-	-	±100	nA	V _{GS} =±12V, V _{DS} =0V
I _{DSS}	-	-	1	μA	V _{DS} =30V, V _{GS} =0V
	-	-	5	μA	V _{DS} =24V, V _{GS} =0V, Tj=70°C
*R _{DS(ON)}	-	-	34	mΩ	I _D =6.1A, V _{GS} =4.5V
	-	-	50		I _D =2A, V _{GS} =2.5V
*G _{FS}	-	20	-	S	V _{DS} =10V, I _D =6.1A
Dynamic					
t _{d(ON)}	-	21	-	ns	V _{DS} =15V, I _D =1A, V _{GS} =4.5V, R _G =6Ω, R _D =15Ω
t _r	-	45	-	ns	
t _{d(OFF)}	-	40	-	ns	
t _f	-	30	-	ns	
Q _g	-	8	12	nC	V _{DS} =15V, I _D =6.1A, V _{GS} =4.5V
Q _{gs}	-	1.9	-	nC	
Q _{gd}	-	2.6	-	nC	

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

Source Drain Diode

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
*V _{SD}	-	-	1.2	V	I _S =1.7A, V _{GS} =0V
*T _{rr}	-	40	-	ns	I _S =1.7A, V _{GS} =0V, dI/dt=100A/μs

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

Characteristic Curves

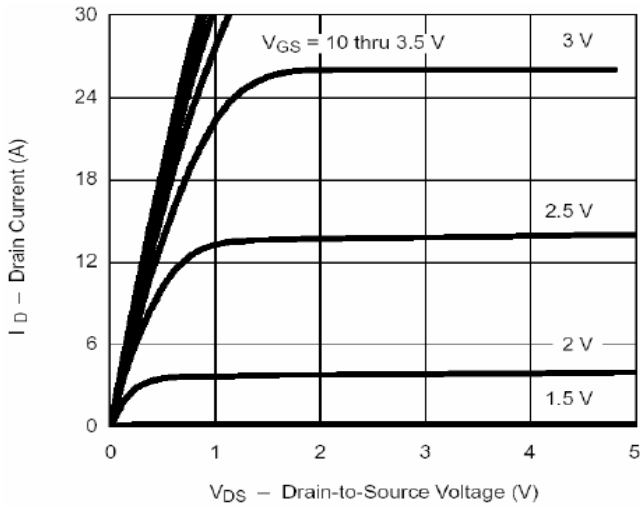


Fig 1. Typical Output Characteristics

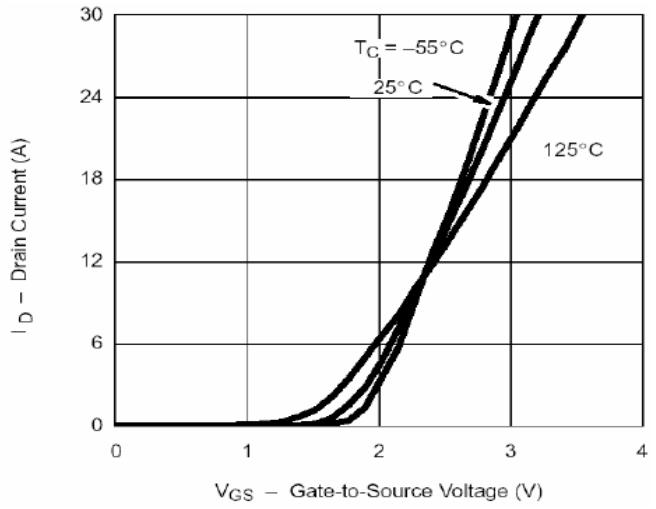


Fig 2. Transfer Characteristics

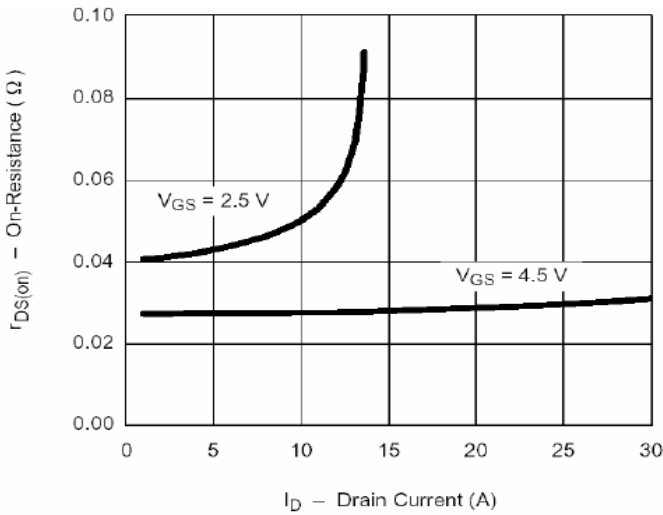


Fig 3. On-Resistance vs. Drain Current

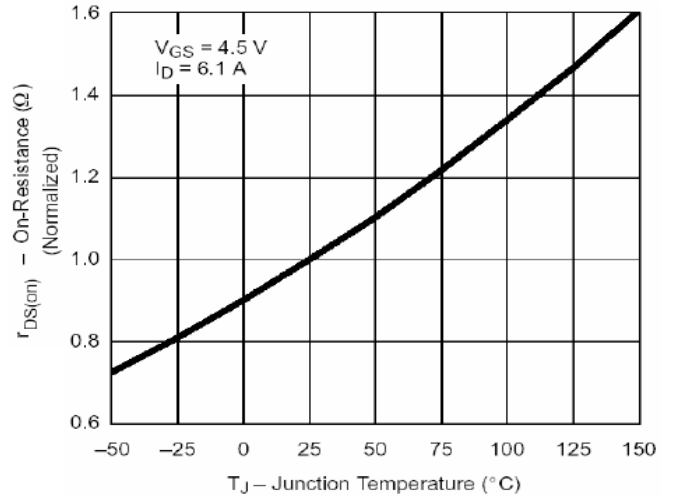


Fig 4. On-Resistance vs. Junction Temperature

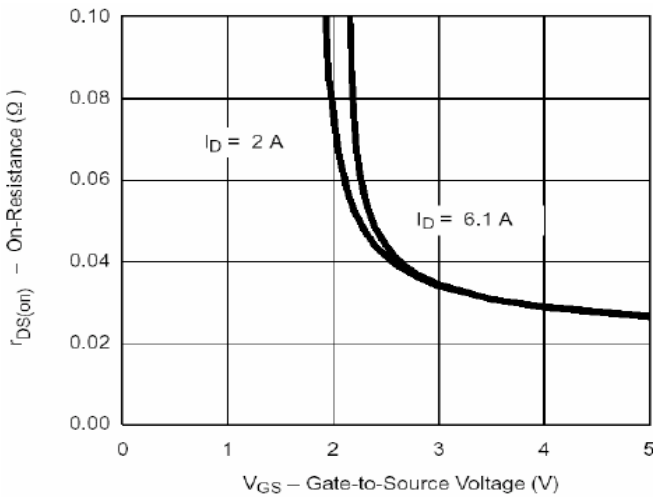


Fig 5. On-Resistance vs. Gate-Source Voltage

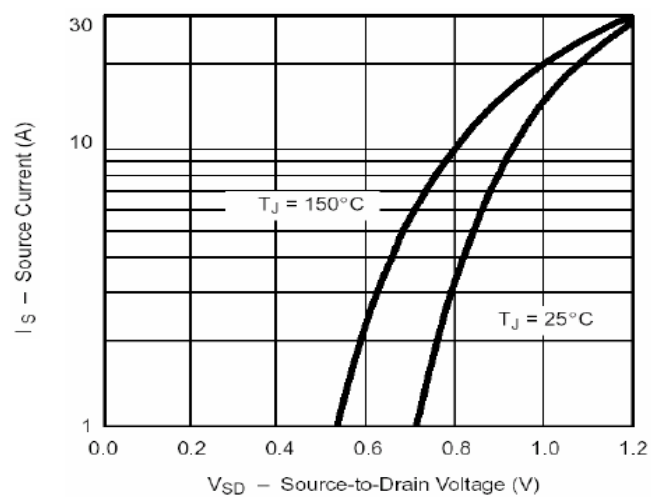


Fig 6. Body Diode Characteristics

Characteristic Curves(Cont.)

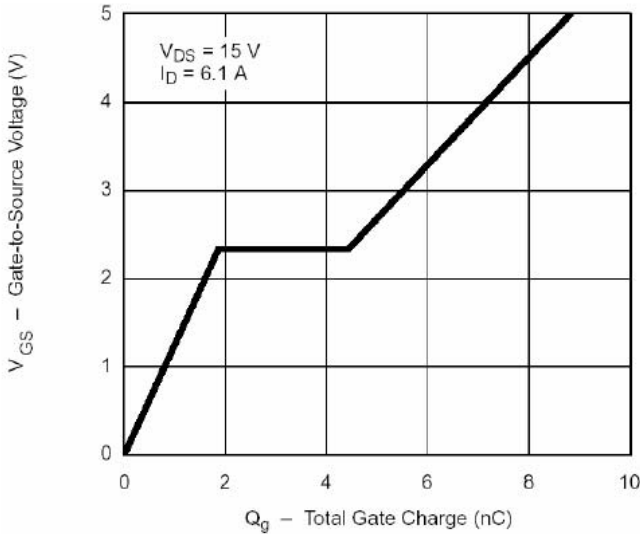


Fig 7. Gate Charge Characteristics

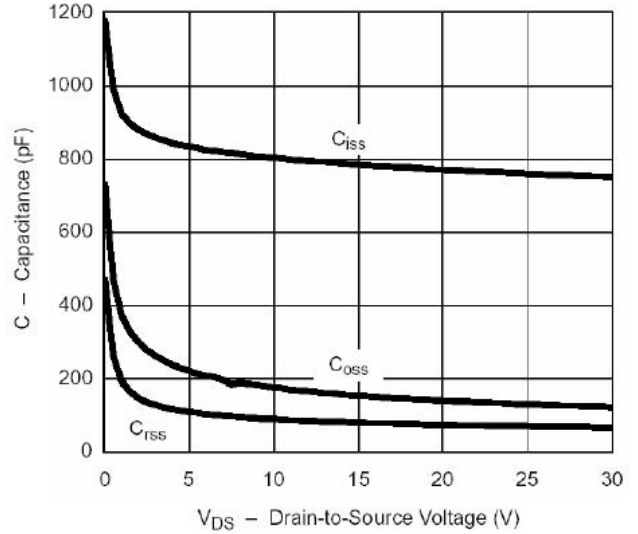


Fig 8. Typical Capacitance Characteristics

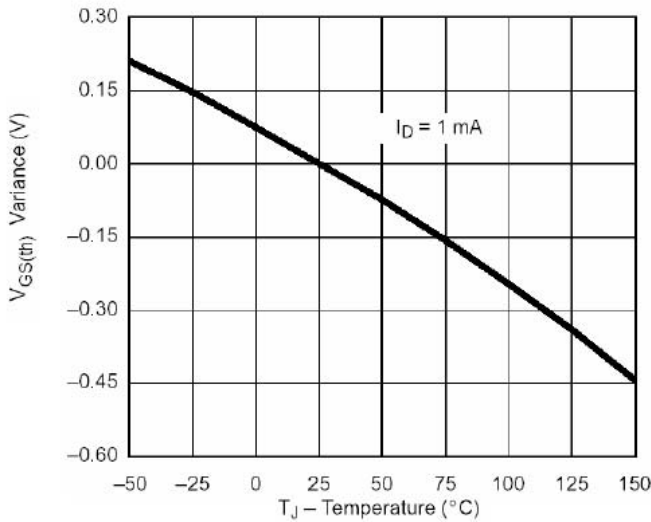


Fig 9. Threshold Voltage

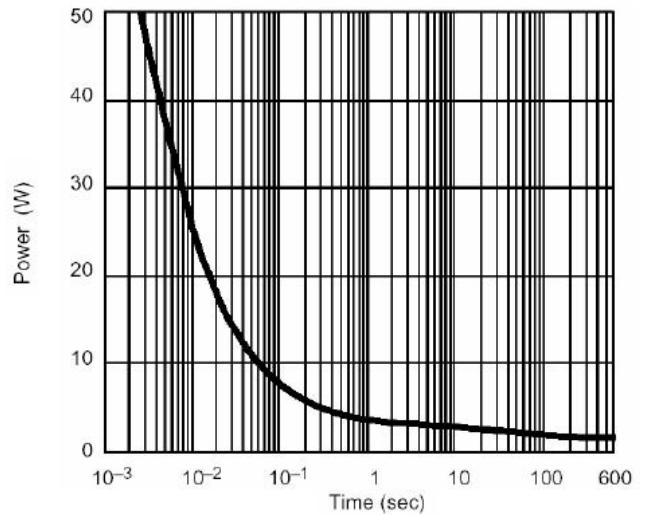


Fig 10. Single Pulse Power

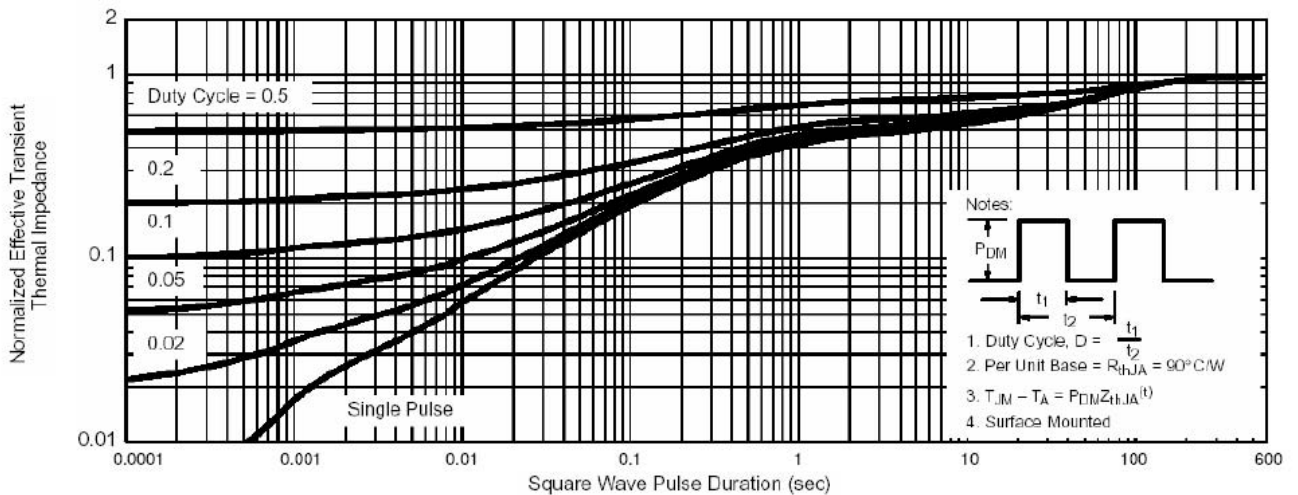
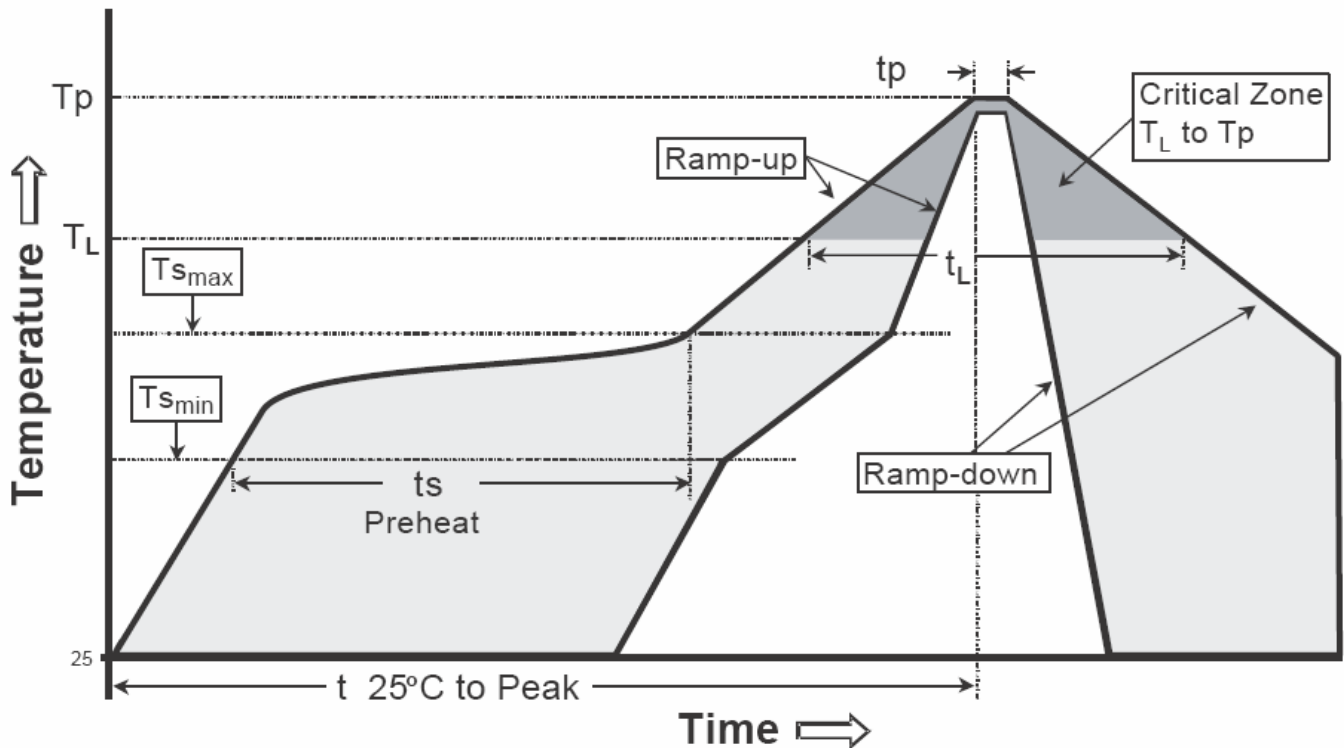


Fig 11. Normalized Maximum Transient Thermal Impedance

Recommended wave soldering condition

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

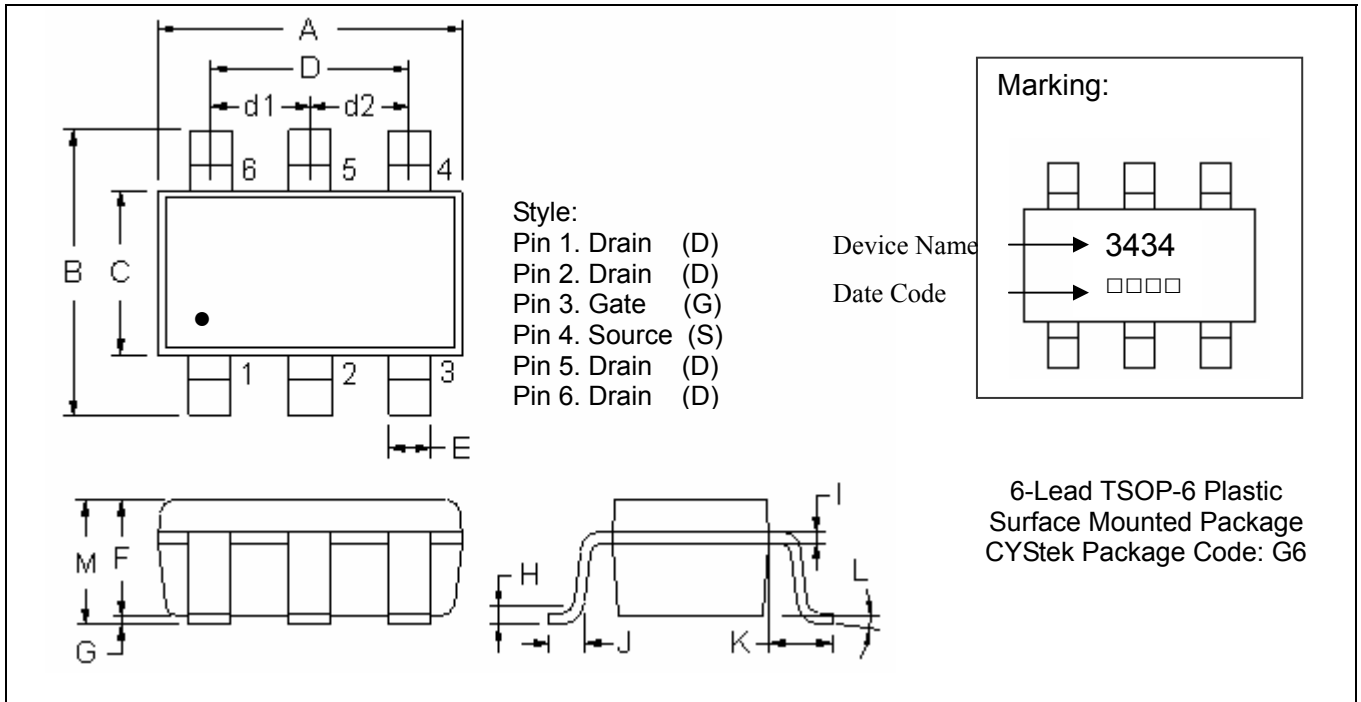
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T _{s min})	100°C	150°C
-Temperature Max(T _{s max})	150°C	200°C
-Time(t _{s min} to t _{s max})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	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.

TSOP-6 Dimension



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1063	0.1220	2.70	3.10	G	0	0.0039	0	0.10
B	0.1024	0.1181	2.60	3.00	H	-	0.0098	-	0.25
C	0.0551	0.0709	1.40	1.80	I	0.0047 REF		0.12 REF	
D	0.0748 REF		1.90 REF		J	0.0177 REF		0.45 REF	
d1	0.0374 REF		0.95 REF		K	0.0236 REF		0.60 REF	
d2	0.0374 REF		0.95 REF		L	0°	10°	0°	10°
E	0.0118	0.0197	0.30	0.50	M	-	0.0433	-	1.10
F	0.0276	0.0394	0.70	1.00					

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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