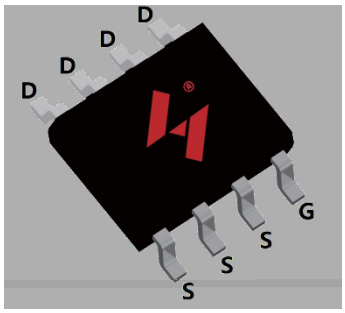
P-Channel Enhancement Mode MOSFET

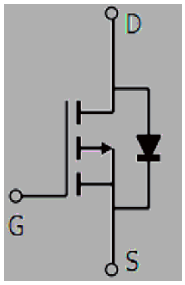
FeatureDescription

- -30V/-12A
  $R_{DS(ON)}$ = 10.8 m (typ.) @V_{GS} =- 10V
  $R_{DS(ON)}$ = 14.6 m (typ.) @V_{GS} = -4.5V
- 100% Avalanche Tested
- Reliable and Rugged
- Halogen Free and Green Devices Available (RoHS Compliant)

Pin Description



SOP8L



P-Channel MOSFET

Applications

- Power Management DC/DC
- Switching application

Ordering and Marking Information

S HY12P03 YYXXXJWW G	Package Code S: SOP-8L Date Code YYXXX WW Assembly Material G:Halogen Free

Note: HUAYI lead-free products contain molding compounds/die attach materials and 100% matte tin plate Termi-Nation finish;which are fully compliant with RoHS. HUAYI lead-free products meet or exceed the lead-Free require-ments of IPC/JEDEC J-STD-020 for MSL classification at lead-free peak reflow temperature. HUAYI defines ñGreenò to mean lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500ppm by weight).

HUAYI reserves the right to make changes, corrections, enhancements, modifications, and improveme nts to this pr-oduct and/or to this document at any time without notice.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit

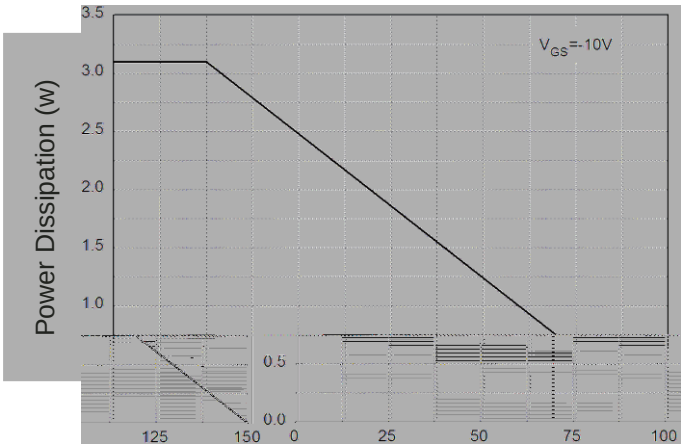
Electrical Characteristics (Cont.) (Tc =25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	HY12P03			Unit
			Min	Typ.	Max	
Dynamic Characteristics						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1 MHz	-	2.4	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-15V, Frequency=1.0MHz	-	2350	-	pF
C_{oss}	Output Capacitance		-	330	-	
C_{rss}	Reverse Transfer Capacitance		-	139	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-15V,R_G=1 I_{DS}=-12A,V_{GS}=-10V	-	11	-	ns
T_r	Turn-on Rise Time		-	9	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	25	-	
T_f	Turn-off Fall Time		-	13	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	V_{DS} = -24V, V_{GS} = -10V I_D = -12A,	-	34	-	nC
Q_{gs}	Gate-Source Charge		-	4.5	-	
Q_{gd}	Gate-Drain Charge		-	8	-	

Note: *Pulse test˙ pulse width 300us˘ duty cycle 2%

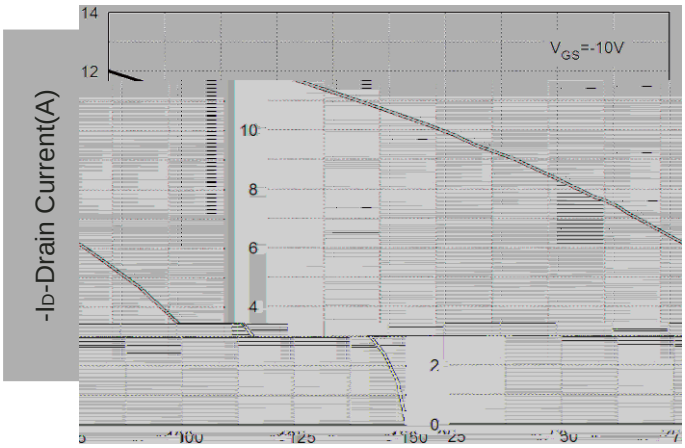
Typical Operating Characteristics

Figure 1: Power Dissipation



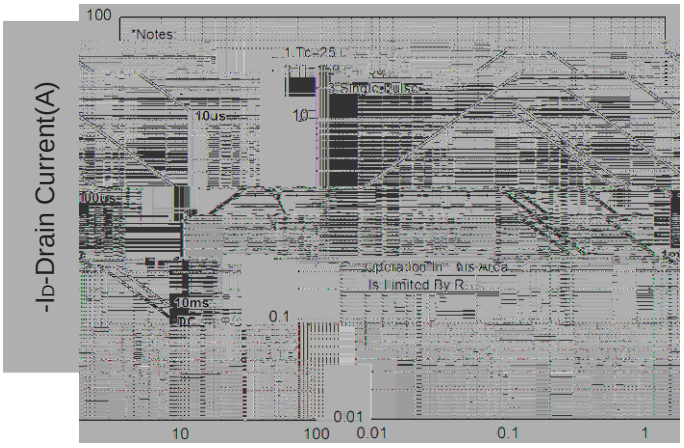
Tc-Case Temperature(Ņ)

Figure 2: Drain Current



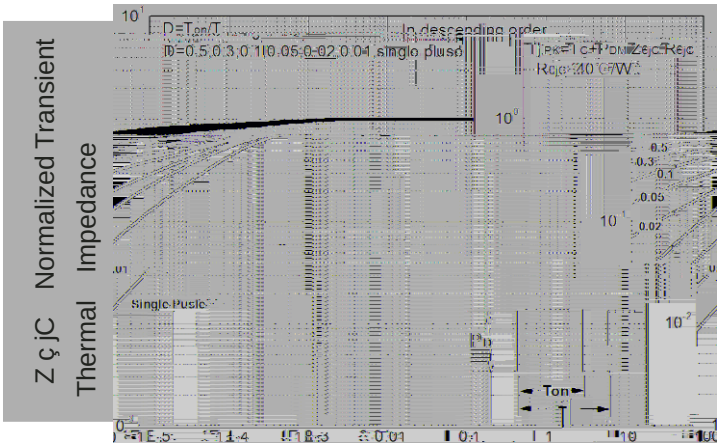
Tc-Case Temperature(Ņ)

Figure 3: Safe Operation Area



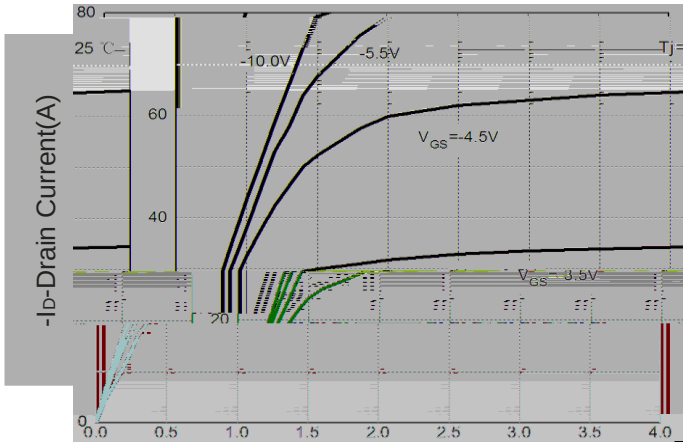
- VDS-Drain-Source Voltage(V)

Figure 4: Thermal Transient Impedance



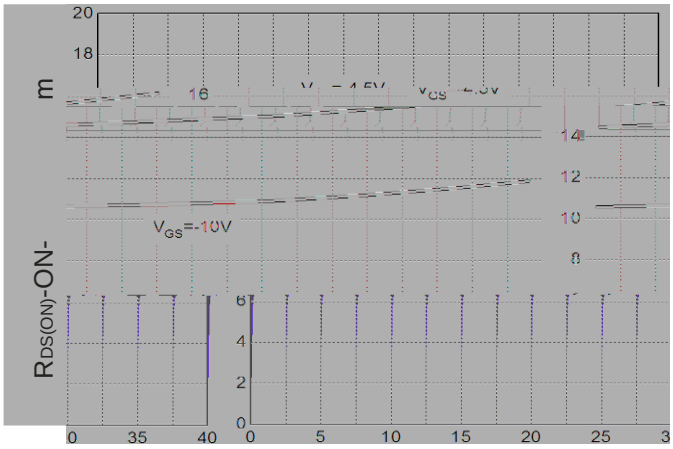
Maximum Effective Transient Thermal Impedance, Junction-to-Case

Figure 5: Output Characteristics



-VDS-Drain-Source Voltage (V)

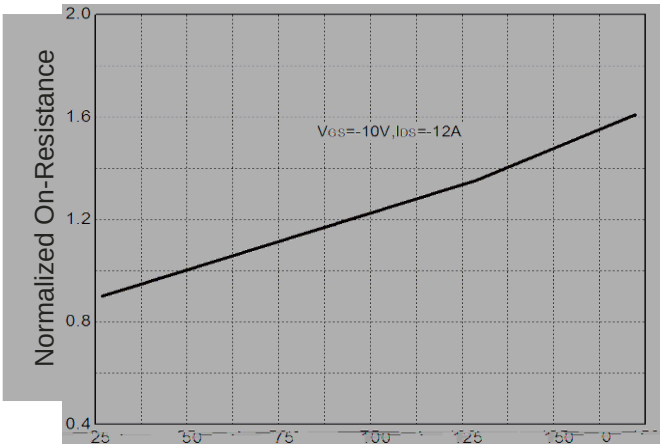
Figure 6: Drain-Source On Resistance



- ID-Drain Current(A)

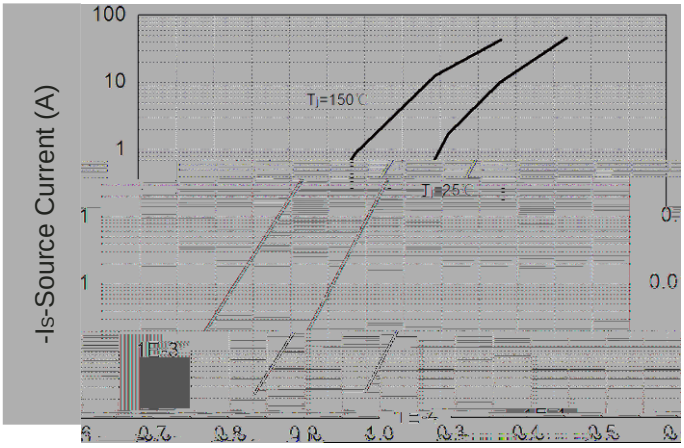
Typical Operating Characteristics(Cont.)

Figure 7: On-Resistance vs. Temperature



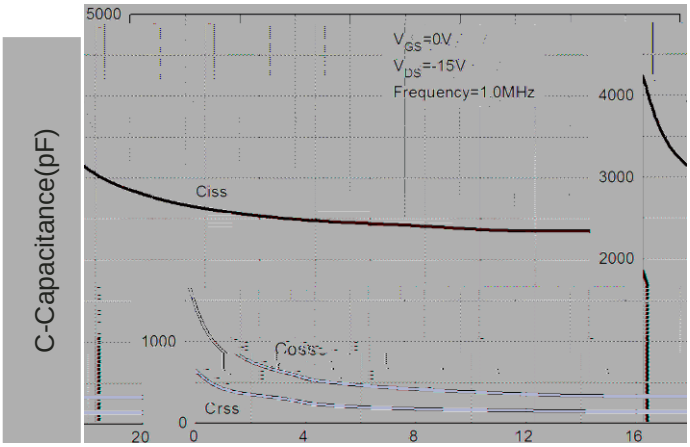
Tj-Junction Temperature (℃)

Figure 8: Source-Drain Diode Forward



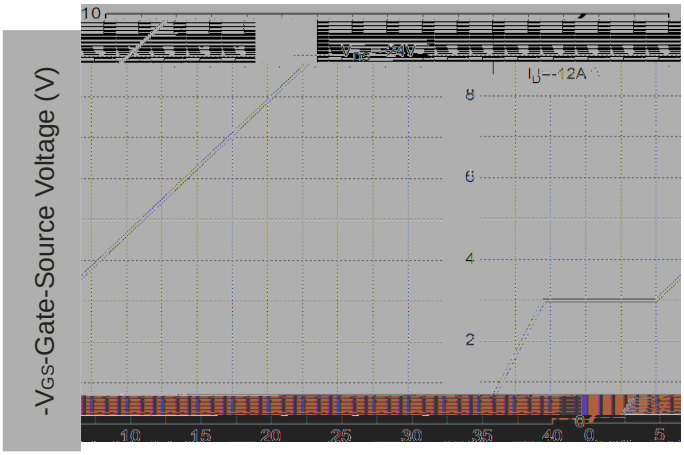
-VSD-Source-Drain Voltage(V)

Figure 9: Capacitance Characteristics



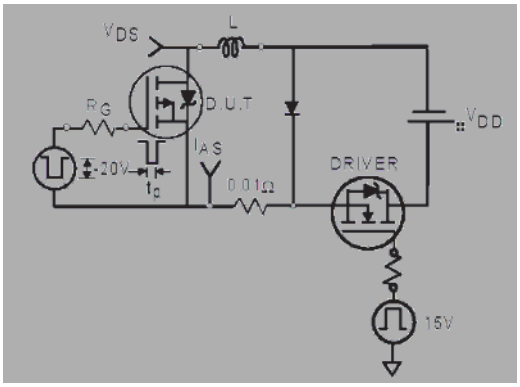
-VDS-Drain-Source Voltage (V)

Figure 10: Gate Charge Characteristics

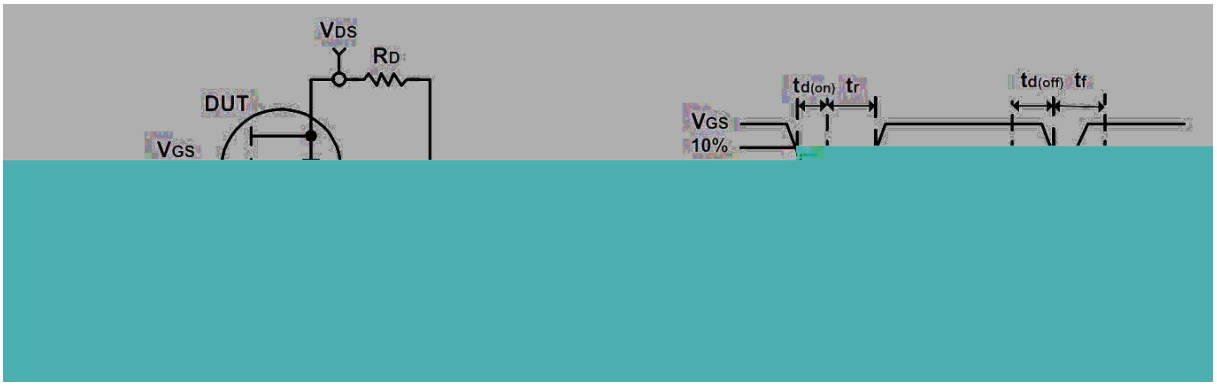


QG-Gate Charge (nC)

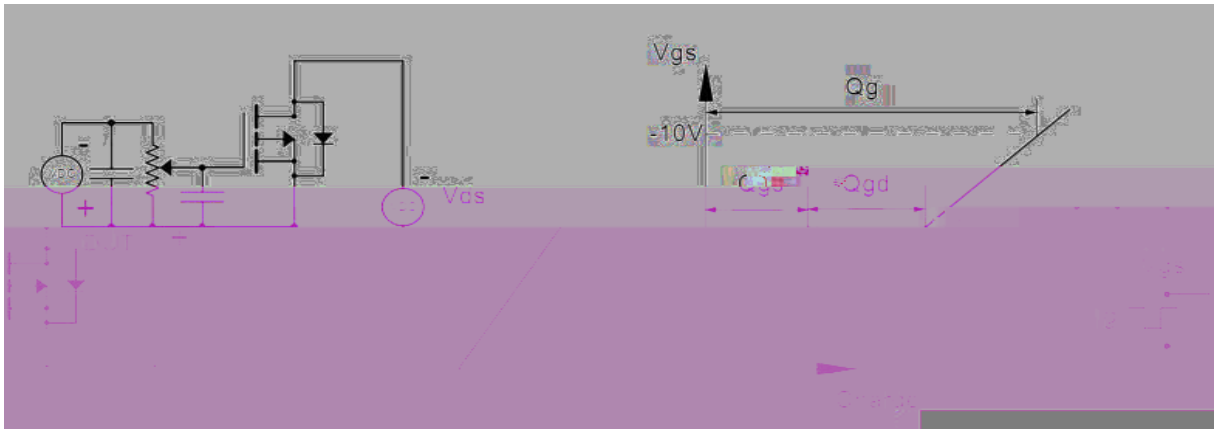
Avalanche Test Circuit



Switching Time Test Circuit



Gate Charge Test Circuit

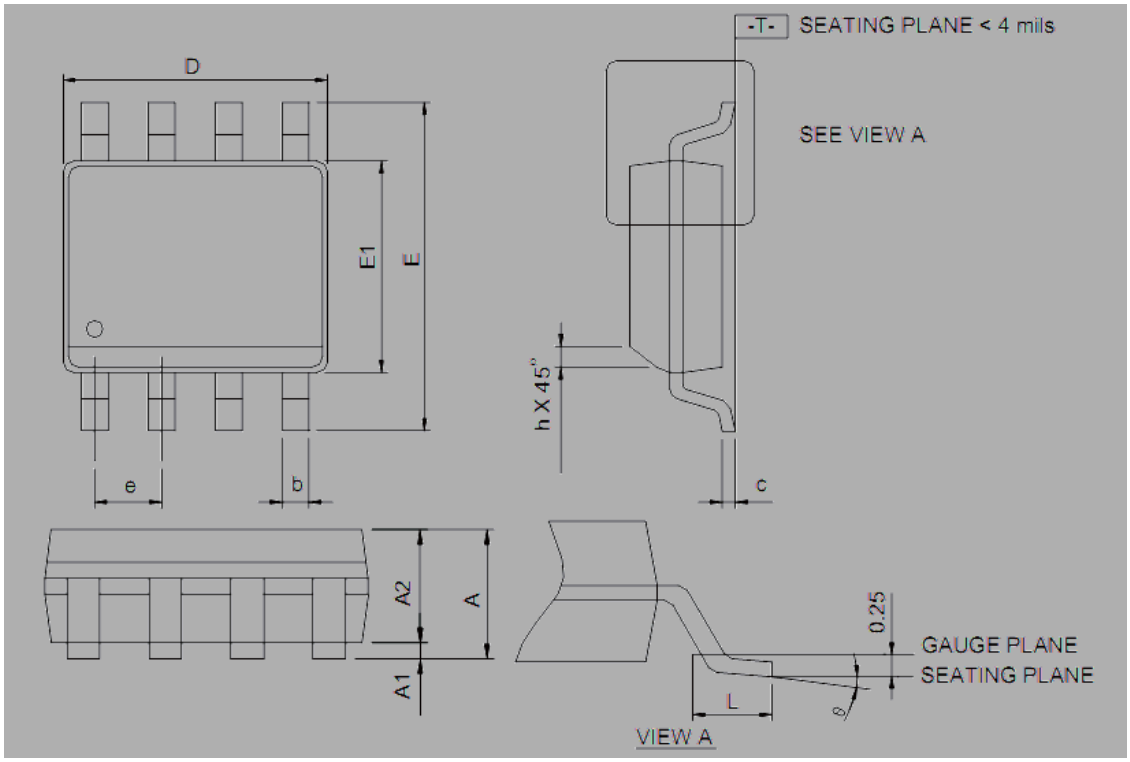


Device Per Unit

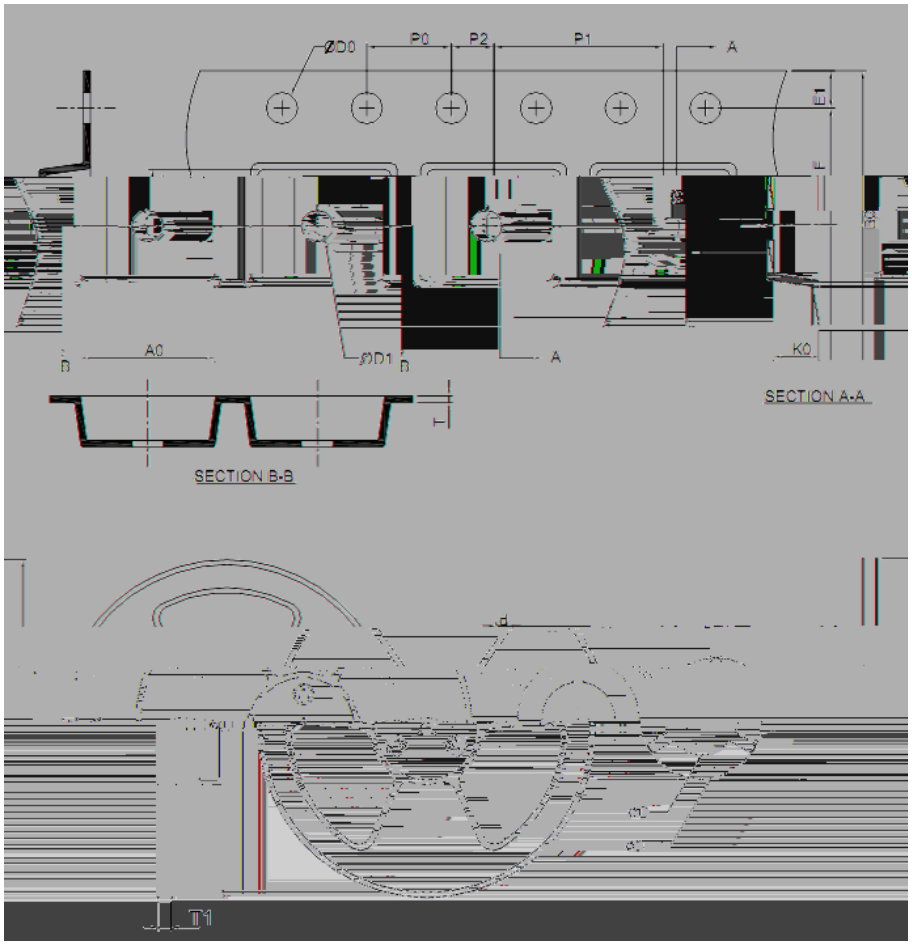
Package Type	Unit	Quantity
SOP-8L	Reel	2500

Package Information

SOP-8L



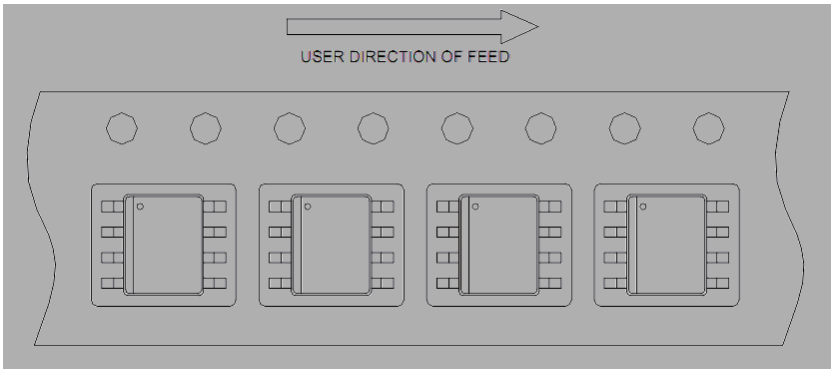
Carrier Tape & Reel Dimensions



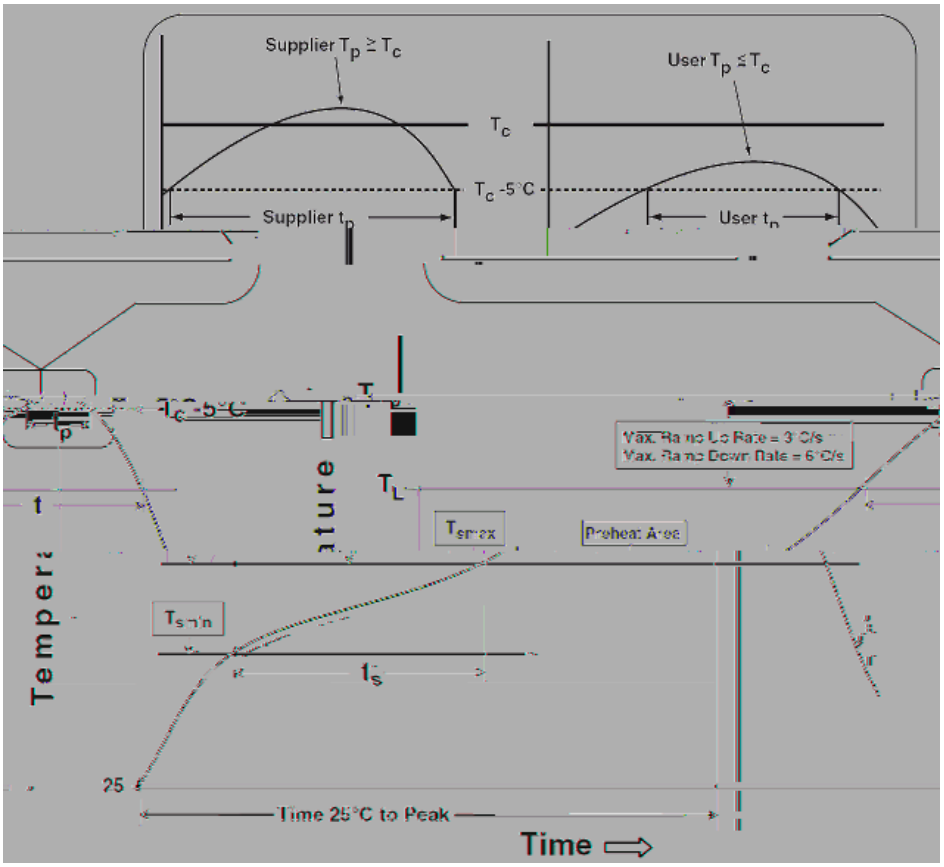
Application	A	H	T1	C	d	D	W	E1	F
SOP8L	330.0 2.00	50 MIN.	12.4+2.00 -0.00	13.0+0.50 -0.20	1.5 MIN.	20.2 MIN.	12.0 0.30	1.75 0.10	5.5 0.05
	P0	P1	P2	D0	D1	T	A0	B0	K0
2.10 0.20		4.0 0.10	8.0 0.10	2.0 0.05	1.5+0.10 -0.00	1.5 MIN.	0.6+0.00 -0.40	6.40 0.20	5.20 0.20

(mm)

Taping Direction Information



Classification Profile



Classification Reflow Profiles

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat & Soak Temperature min (T_{smin}) Temperature max (T_{smax}) Time (Tsmin to Tsmax) (t_s)	100 °C 150 °C 60-120 seconds	150 °C 200 °C 60-120 seconds
Average ramp-up rate ($T_{smax}$to T_P)	3 °C/second max.	3°C/second max.
Liquidous temperature (T_L) Time at liquidous (t_L)	183 °C 60-150 seconds	217 °C 60-150 seconds
Peak package body Temperature (T_p)*		

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