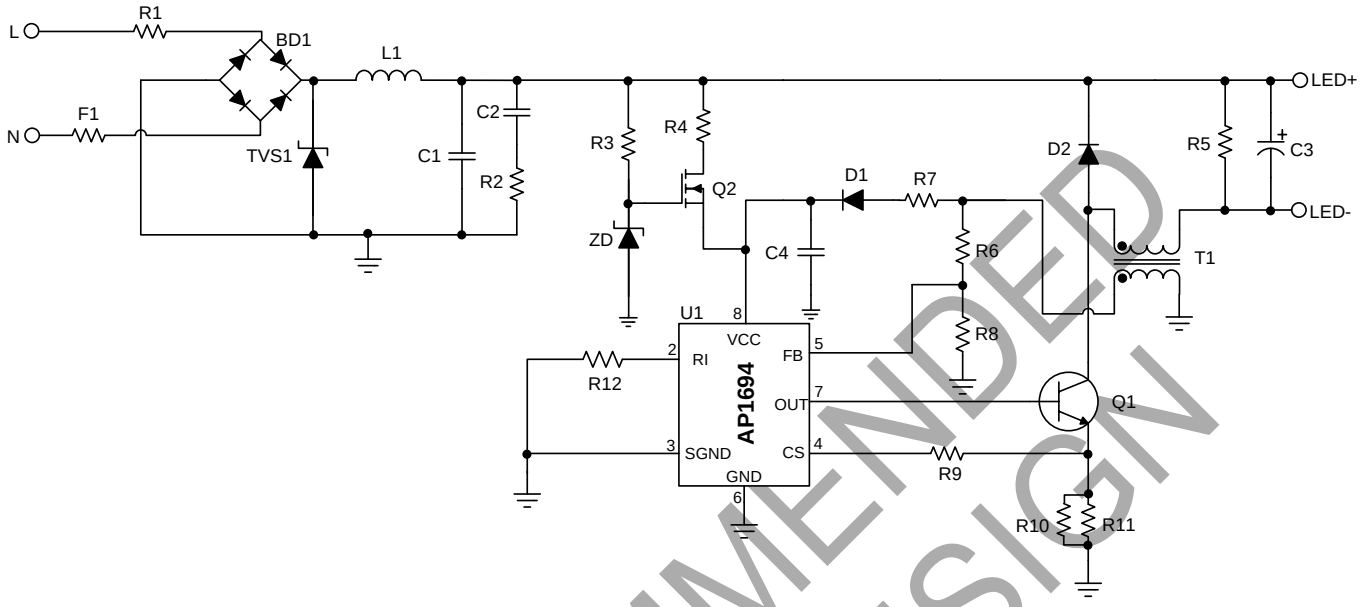
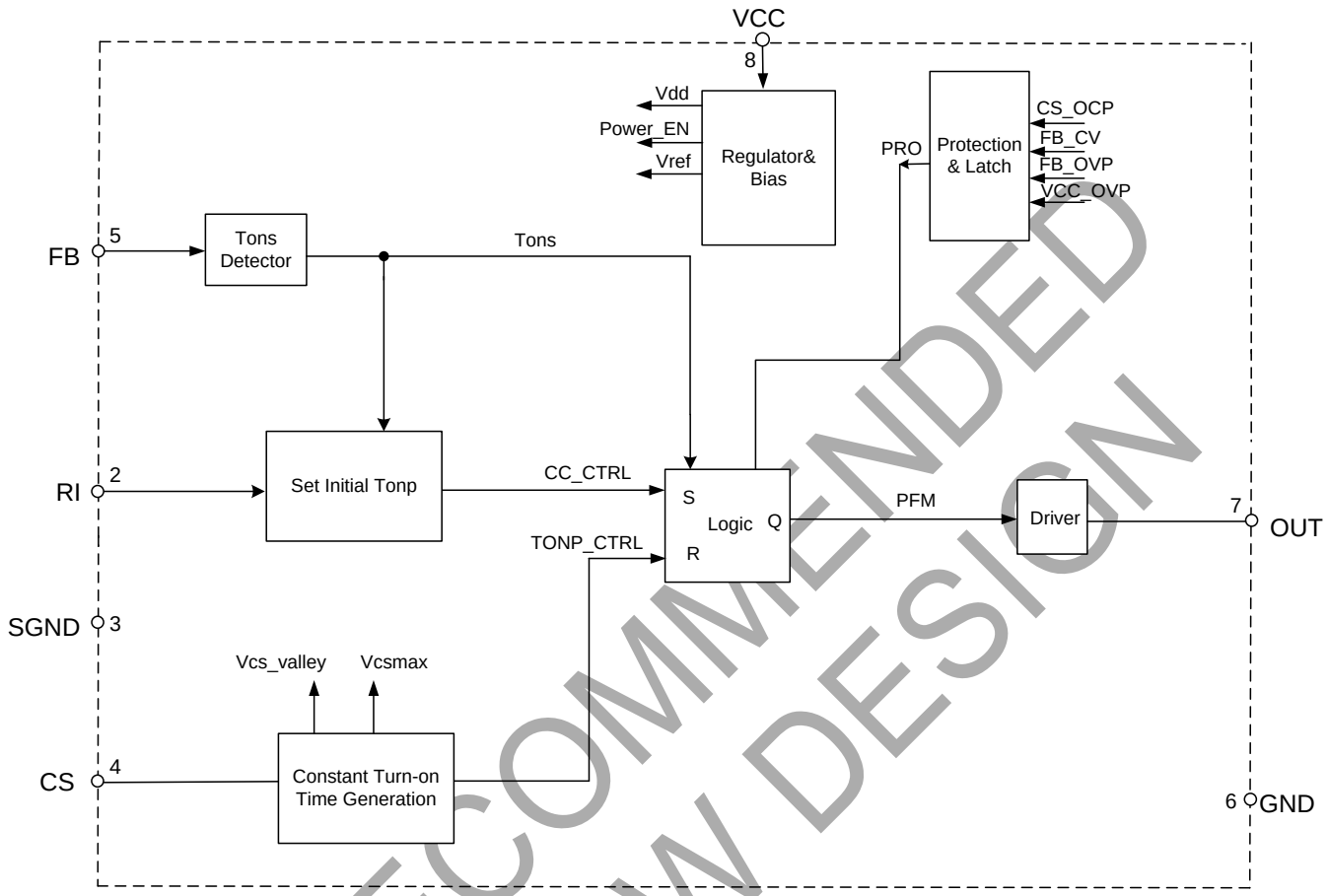
Typical Applications Circuit



Pin Descriptions

Pin Number	Pin Name	Function
1	NC	No connection.
2	RI	The initial on time setting resistor.
3	SGND	Must connect to GND.
4	CS	Primary current sensing.
5	FB	The feedback voltage from auxiliary winding
6	GND	Ground.
7	OUT	Gate driver output.
8	VCC	Supply voltage of gate driver and control circuits of the IC.

Functional Block Diagram



Absolute Maximum Ratings (Note 4) (@T_A = +25°C, unless otherwise specified.)

Symbol	Parameter	Rating	Unit
V_{CC}	Power Supply Voltage	-0.3 to 35	V
I_{OUT}	Driver Output Current	150	mA
V_{CS}	Voltage at CS to GND	-0.3 to 7	V
V_{FB}	FB Input Voltage	-40 to 10	V
T_J	Operating Junction Temperature	-40 to +150	°C
T_{STG}	Storage Temperature	-65 to +150	°C
T_{LEAD}	Lead Temperature (Soldering, 10 sec)	+300	°C
P_D	Power Dissipation (T_A = +50°C)	0.65	W
θ_{JA}	Thermal Resistance (Junction to Ambient)	160	°C/W
–	ESD (Human Body Model)	2000	V
–	ESD (Charged-device Model)	±1000	V

Note: 4. Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability.

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_{CC}	Power Supply Voltage	7	25	V
T_A	Ambient Temperature	-40	+105	°C

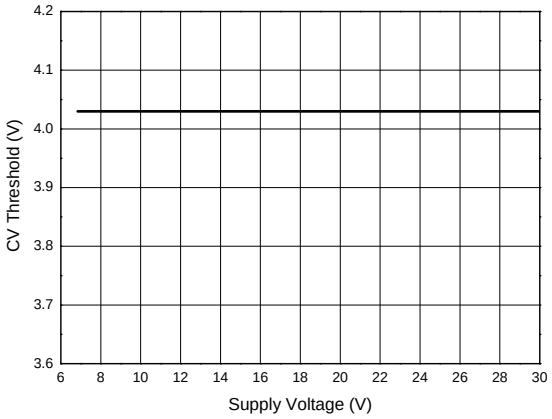
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
UVLO Section						
V_{TH} (ST)	Start-up Threshold	–	13	14.5	16	V
V_{OPR} (Min)	Minimum Operating Voltage	After turn on	5.5	6.5	7.5	V
V_{CC_OVP}	VCC OVP Voltage	–	27	29	31	V
–	VCC Delatch Voltage (Note 5)	–	3	4	5	V
Standby Current Section						
I_{ST}	Start-up Current	V_{CC} = V_{TH} (ST) -0.5V, Before start up	–	–	20	μA
I_{CC} (OPR)	Operating Current	Static	–	900	1300	μA
Drive Output Section						
I_{OUT}	Output Current (Note 5)	V_{CS_PEAK} = 1V	–	–	60	mA
V_{OS}	UVLO Saturation Voltage	V_{CC} = 0 to $V_{CC\text{-}ON}$, I_{SINK} = 10mA	–	–	1.1	V
Current Sense Section						
V_{CS_REF}	Current Sense Reference	–	–	1	–	V
V_{CS_CLAMP}	Current Sense Reference Clamp	–	1.2	1.4	–	V
t_{ONP_MIN}	Minimum t_{ONP}	–	700	–	1000	ns
$t_{D(H\text{-}L)}$	Delay to Output (Note 5)	–	50	150	250	ns
Feedback Input Section						
I_{FB}	Feedback Pin Input Leakage Current	V_{FB} = 2V	–	–	4	μA
V_{FB_CV}	FB CV Threshold	–	3.8	4	4.2	V
V_{FB_OVP}	FB OVP Threshold	–	4.5	6	7.5	V
Output Current						
–	System Output Current On Final Test Board	–	–	–	±2	%
Over Temperature Protection Section						
–	Shutdown Temperature (Note 5)	–	+150	–	–	°C
–	Temperature Hysteresis (Note 5)	–	–	+20	–	°C

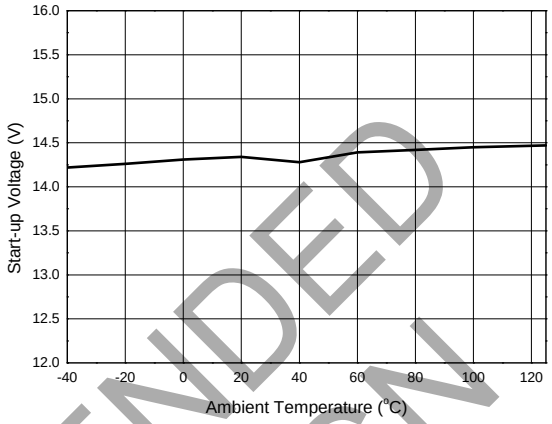
Note: 5. These parameters, although guaranteed by design, are not 100% tested in production.

Performance Characteristics

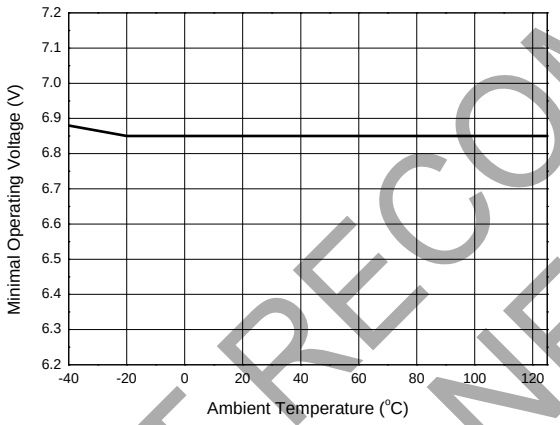
CV Threshold vs. Supply Voltage



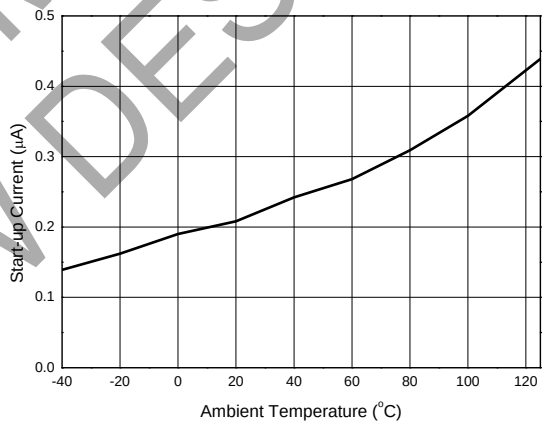
Start-up Voltage vs. Ambient Temperature



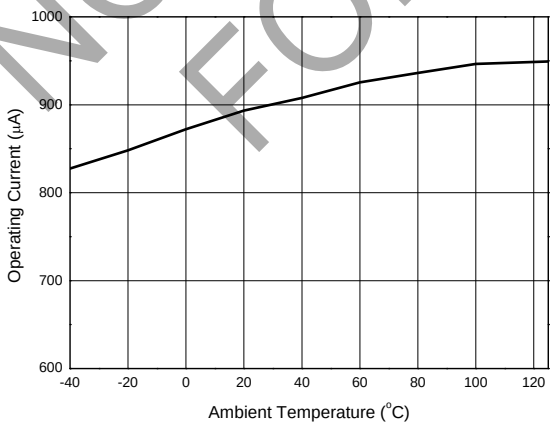
Minimal Operating Voltage vs. Ambient Temperature



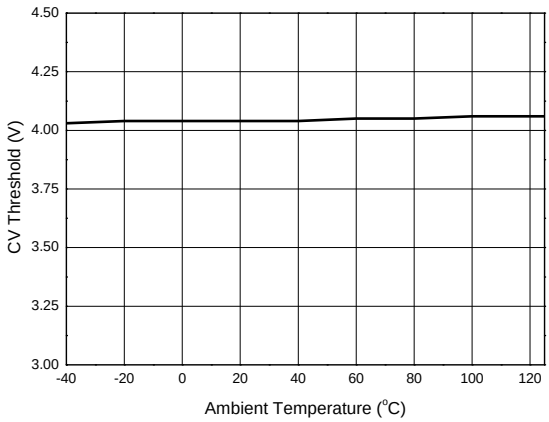
Start-up Current vs. Ambient Temperature



Operating Current vs. Ambient Temperature

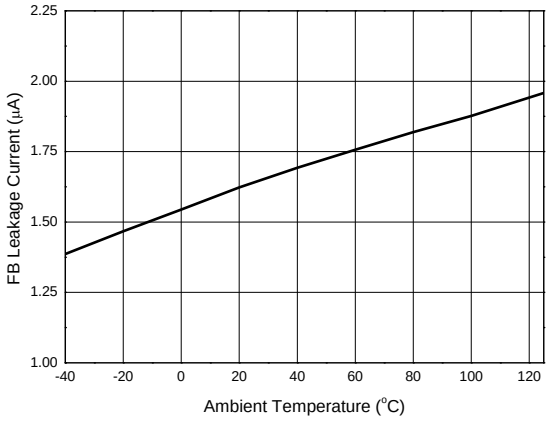


CV Threshold vs. Ambient Temperature

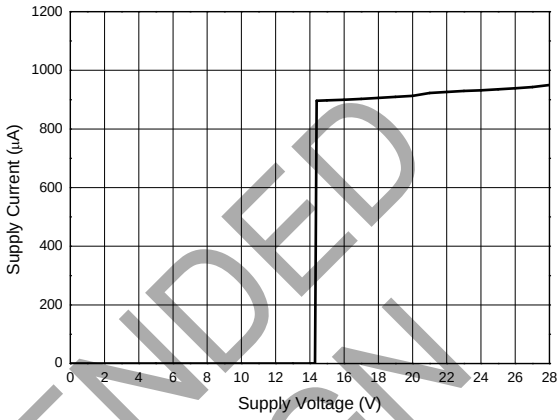


Performance Characteristics (Cont.)

FB Leakage Current vs. Ambient Temperature



Supply Current vs. Supply Voltage



Ordering Information

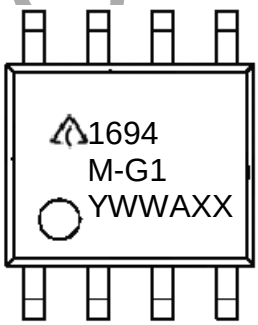
AP1694 X XX - G1

Product Name	Package	Packing	RoHS/Green
	M : SO-8	TR : Tape & Reel	G1 : Green

Package	Ambient Temperature Range	Part Number	Marking ID	Packing
SO-8	-40°C to +105°C	AP1694MTR-G1	1694M-G1	4000/13"Tape & Reel

Marking Information

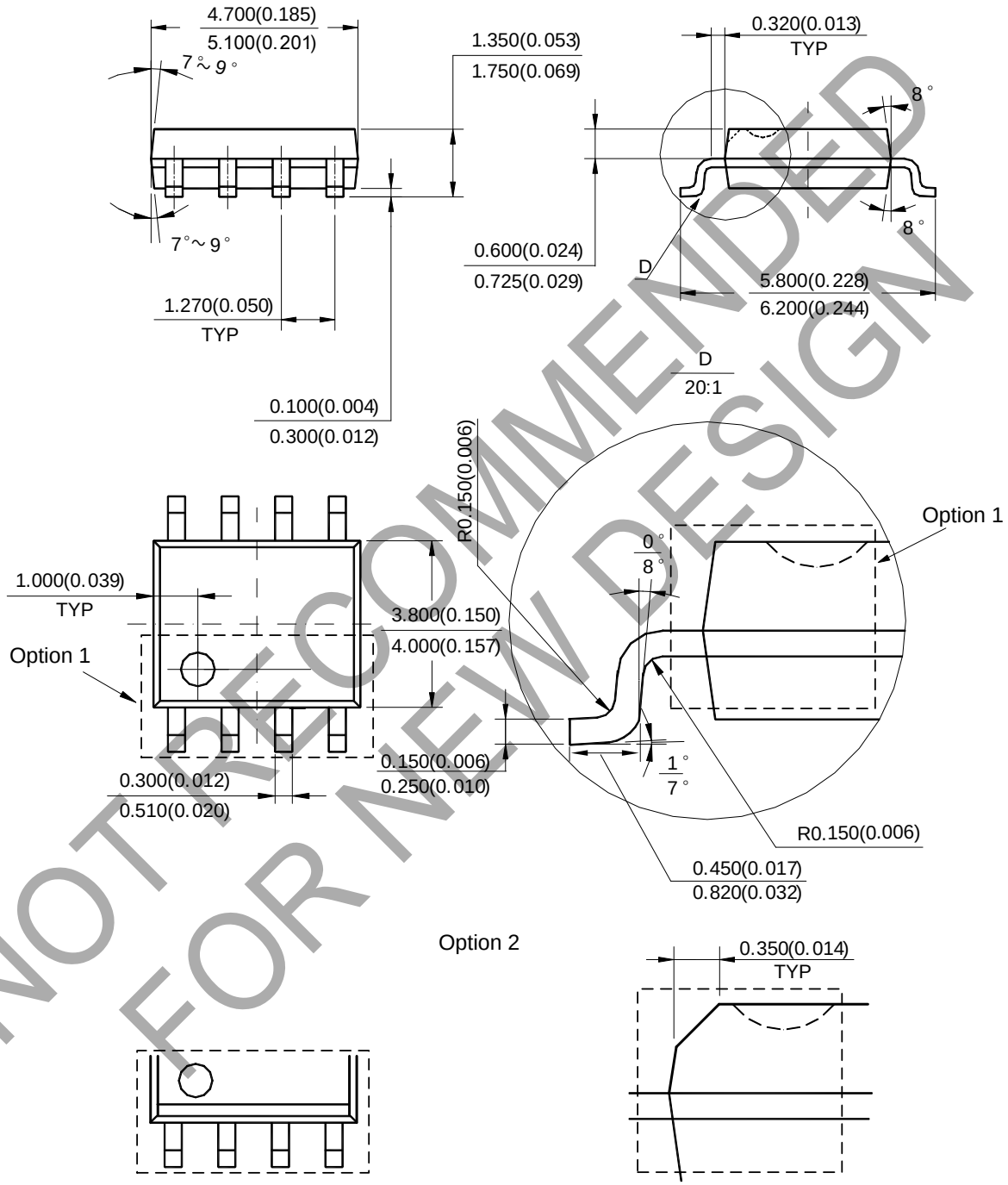
(Top View)



First and Second Lines: Logo and Marking ID
(See Ordering Information)
Third Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: 7th and8th Digits of Batch No.

Package Outline Dimensions (All dimensions in mm (inch).)

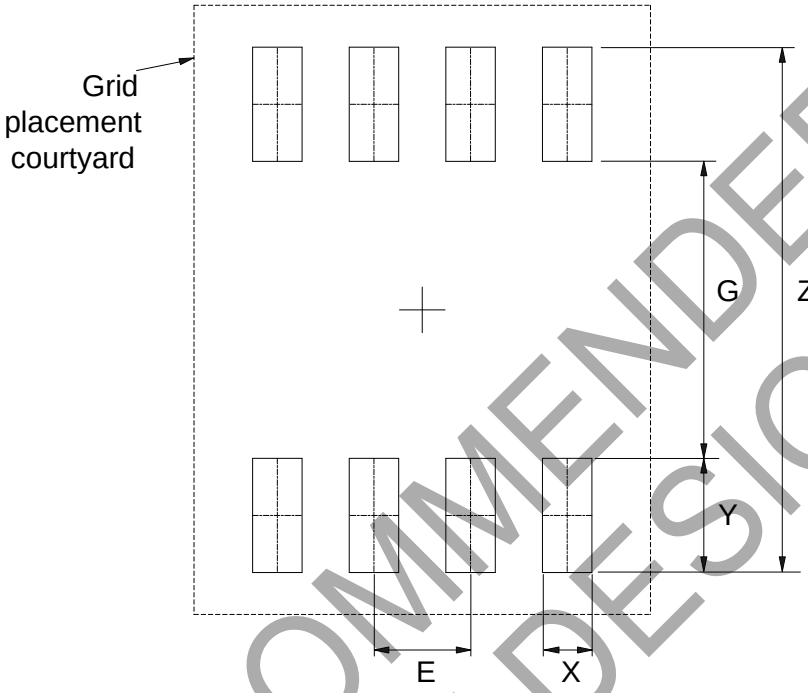
(1) Package Type: SO-8



Note: Eject hole, oriented hole and mold mark is optional.

Suggested Pad Layout

(1) Package Type: SO-8



Dimensions	Z (mm)/(inch)	G (mm)/(inch)	X (mm)/(inch)	Y (mm)/(inch)	E (mm)/(inch)
Value	6.900/0.272	3.900/0.154	0.650/0.026	1.500/0.059	1.270/0.050

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