



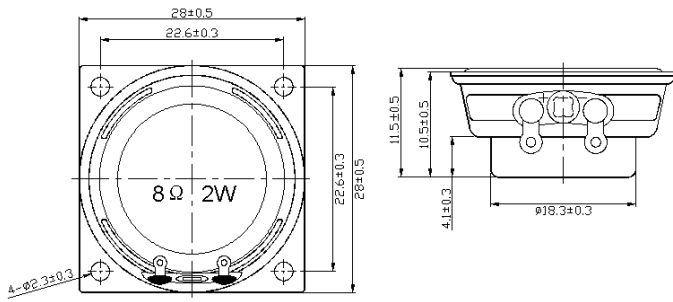
PRODUCT INFORMATION

PART #	CES280S115CB8SPN360T								Revision: 0-2014						
	SQUARE SPEAKER														
DESCRIPTION: Challenge Electronics Speaker; 28.0 mm Long; Square shape; 28.0 mm Wide, 11.5 mm High; DA = 3 W maximum power; Impedance 8 Ohm; Steel Frame; Paper Cone; NdFeB Magnet, 360 Hz. (Fo) Resonant Frequency; Solder Terminal Lugs Termination; RoHS Lead Free Compliant															
SPECIFICATIONS															
Shape	Square		Impedance	8 Ω ± 15%, at: 1,000 Hz. 1.0 V				DC Resistance							
Rated Power	Sine Wave	2.0 W	Square Wave	W	Maximum Power	Sine Wave	3.0 W	Square Wave	W						
Effective Frequency Band	360 Hz. to 20,000 Hz. SPL within 10 dB Average				Resonant Frequency (Fo)		360 Hz. ± 20%, at 1.0 V								
Sound Pressure Level	80 ± 3.0 dB(A), at: 1 W, 0.5 m, Average 600, 800, 1,000, 1,200 Hz, at 25°C, Baffle board (IEC)														
Operating Temperature	-20°C to + 55°C		Storage Temperature	-30°C to +70°C											
Physical Dimensions	Length or Diameter (L /D)		28.0 mm	Width (W)	28.0 mm	Height (H)	11.5 mm								
Baffle Opening	Diameter (D)		25 mm Ø	Width (W)	Minimum Opening Recessed		3 mm								
Mounting	Length or Diameter (L /D)		22.5 mm	Width (W)	22.5 mm	Mounting Holes	4	Holes size	2.3 mm Ø ±0.3						
Distortion	Less than 5% at 1,000 Hz. at 2.0 W.														
Buzz & Rattle	Not be audible at 4 V sine wave between Fo to 20,000 Hz.														
Polarity	When a positive DC Current is applied to the voice coil terminal marked + or red, the diaphragm shall move forward														
Material	Magnet	Rare Earth, NdFeB, OD 18.3 mm, H 4.1 mm				Flux Density	± 10% Gauss								
	Frame	Steel Plated			Cone Material	PU + Paper									
	Termination	Terminal Lugs for wire lead soldering. (Caution, overheating the terminal may damage connections of voice coil leads)													
	Optional Gasket														
Speaker Parameters	Qms		Qes		Qts		Vas		Mmd		M		M/N		BL
Approximate Weight	grams		Shielding	No	Compliance	RoHS Lead Free									
Options															
RELIABILITY															
Maximum Power Test	With program White-Noise source Maximum Power , 1 minute on, 2 minutes off, 10 cycles , per (EIA) *														
Thermal Operating Temperature Test	24 hours continuous operation at Rated Power , at Maximum Rated Operating Temperatures *														
	24 hours continuous operation at Rated Power , at Minimum Rated Operating Temperatures *														
Thermal Storage Temperature Test	96 hours at Maximum Rated Storage Temperatures *														
	96 hours at Minimum Rated Storage Temperatures *														
Thermal Shock Test	5 cycles of Minimum and Maximum Operating Temperature Each cycle shall be set per diagram below and is three (3) hours long *														
Humidity Test	24 Hours at +40°C±2°C. 90-95% RH *														
Operation Life Test	Must perform normal with program White-Noise source at Rated Power for 96 Hours per (EIA) *														
Insulation Test	A minimum of 1 MΩ, measured with 100 Vdc Insulation Resistance Meter, between the Electrical Terminals and the Transducer Case														
Vibration Test	15 minutes at 1.5 mm with 10 to 55 Hz. vibration frequency to each of 3 perpendicular directions *														
Termination Strength	Maximum of 9.8 N (1.0 Kg) load pull test, applied to each terminal in axial direction for 10 seconds														
Drop Test	Dropped naturally from 1 meter height onto the surface of 40 mm wooden board, 3 axes (X,Y,Z) directions, 3 times (9 times total) *														
* Reliability Test Performance	Parts should conform to original performance within ±5 dB tested with Rated Power, after 3 hours of recovery period.														
Warranty	For a period of one (1) year from date of shipping under normal operations conditions This warranty does not apply to products damaged through misuse, abuse, improper installation, alteration, rework, or attempt to repair														



DIMENSIONS

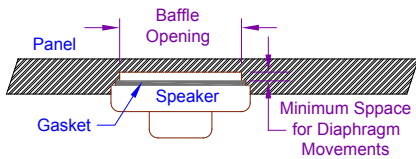
Units in: mm; Tolerance: ± 0.5 mm unless specified otherwise



SPL vs. FREQUENCY RESPONSE

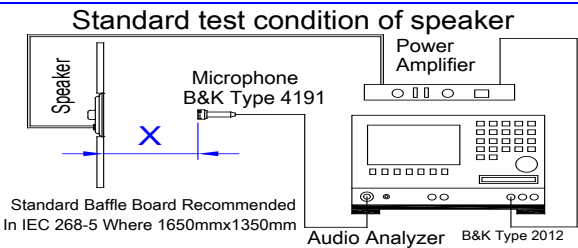


MOUNTING PRECAUTION



For the speaker to function properly, space must be provided between the diaphragm and the baffle opening or grill to allow for diaphragm movement. See diagram.

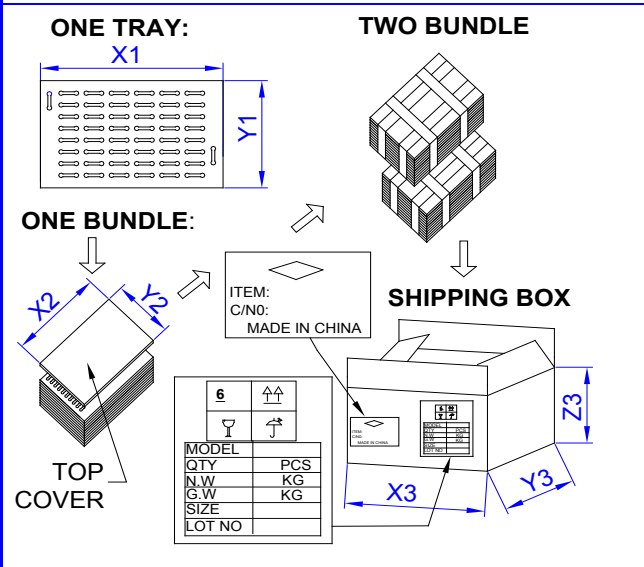
TEST PROCESS



Test Condition	
STANDARD	
Temperature:	15 ~ 35°C
Relative humidity:	45% ~ 85%
Atmospheric pressure:	860 mbar to 1060 mbar
JUDGEMENT	
Temperature :	20±3°C
Relative humidity:	60% ~ 70%
Atmospheric pressure:	860mbar to 1060 mbar

Standard Test Fixture	
Zero Level:	-dB
Mode:	TSR
potentiometer Range:	50 dB
Sweep Time:	0.5 sec
Input Power:	1.0 W
Microphone Distance:	X = 50 cm

PACKAGING



MARKING		TRAY	
Bundle		X1	39 cm
Part Number	Dimensions	Y1	39 cm
Other PN if required		Z1	cm
Quantity		100	
Lot and/or Date Code	BUNDLE		
Bundle Number	Dimensions	X2	cm
Shipping Box		Y2	cm
Part Number		Z2	cm
Other PN (if required)	Quantity		
Quantity	SHIPPING BOX		
Lot and/or Date Code	Dimensions	X3	40.5 cm
PO Number		Y3	40.5 cm
Net Weight		Z3	34 cm
Gross Weighjt	Number of Trays	20	
Box Number of Boxes	Quantity	2000	
Made in China	Approximate Weight		

Revision	Description	By	Date