

GENERAL DESCRIPTION

The SGM4895 is a fully differential audio power amplifier which operates from 2.5V to 5.5V power supply. It can deliver 1.3W into a 8Ω load from 5V supply at THD+N = 1%. It is designed for portable applications.

The SGM4895 has pop/click suppression circuitry, low power consumption shutdown mode and thermal shutdown protection.

Bootstrap capacitors or output coupling capacitors are not needed.

The SGM4895 is available in Green TDFN-3×3-8L and MSOP-8 (Exposed Pad) packages. It operates over an ambient temperature range of -40°C to +85°C.

FEATURES

- **Supply Voltage Range: 2.5V to 5.5V**
- **1.3W into 8Ω Load from 5V Supply at THD+N = 1% (TYP)**
- **1.6W into 4Ω Load from 5V Supply at THD+N = 1% (TYP, SGM4895YDB8 Only)**
- **High PSRR**
- **Low Shutdown Current**
- **Pop/Click Suppression Circuitry**
- **Support Single-Ended or Differential Input**
- **Thermal Overload Protection Circuitry**
- **External Gain Configuration Capability**
- **-40°C to +85°C Operating Temperature Range**
- **Available in Green MSOP-8 (Exposed Pad) and TDFN-3×3-8L Packages**

APPLICATIONS

PDA's
GPS
Mobile Phones
Wireless Handsets
Handheld Computers
Portable Systems

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM4895	TDFN-3×3-8L	-40°C to +85°C	SGM4895YDB8/TR	SGM 4895DB XXXXX	Tape and Reel, 3000
	MSOP-8 (Exposed Pad)	-40°C to +85°C	SGM4895YPMS8/TR	SGM4895 YPMS8 XXXXX	Tape and Reel, 4000

MARKING INFORMATION

NOTE: XXXXX = Date Code and Vendor Code.

XXXXX

Vendor Code
Date Code - Week
Date Code - Year

Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage.....6V
Input Voltage Range.....-0.3V to (V₊) + 0.3V
Typical Thermal Resistance
TDFN-3×3-8L, θ_{JA}72°C/W
Junction Temperature.....+150°C
Storage Temperature Range.....-65°C to +150°C
Lead Temperature (Soldering, 10s).....+260°C
ESD Susceptibility
HBM.....2000V
MM.....400V

OVERSTRESS CAUTION

Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability. Functional operation of the device at any conditions beyond those indicated in the Recommended Operating Conditions section is not implied.

RECOMMENDED OPERATING CONDITIONS

Supply Voltage Range.....2.5V to 5.5V
Operating Temperature Range.....-40°C to +85°C

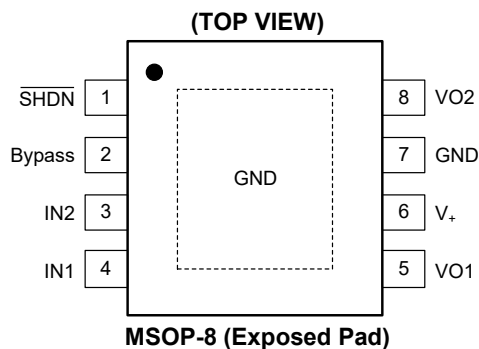
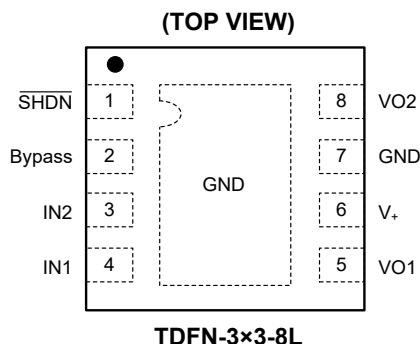
ESD SENSITIVITY CAUTION

This integrated circuit can be damaged if ESD protections are not considered carefully. SGMICRO recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because even small parametric changes could cause the device not to meet the published specifications.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

PIN CONFIGURATIONS



ELECTRICAL CHARACTERISTICS

(The following AC specifications apply for 8Ω load, $A_V = 1V/V$, $T_A = +25^\circ\text{C}$, unless otherwise specified.)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Supply Voltage	V_+			2.5		5.5	V
Shutdown Current	I_{SD}	$V_{IN} = 0V$, $V_{SHDN} = \text{GND}$			0.01	1	μA
Output Offset Voltage	V_{OS}	$V_{IN} = 0V$, $V_{SHDN} = V_+ = 5.0V$		-10	2.5	10	mV
		$V_{IN} = 0V$, $V_{SHDN} = V_+ = 3.3V$		-10	2.0	10	
		$V_{IN} = 0V$, $V_{SHDN} = V_+ = 2.6V$			2.0		
Quiescent Power Supply Current	I_Q	$V_{IN} = 0V$, $I_O = 0A$, $V_{SHDN} = V_+$	$V_+ = 5.0V$, No Load		4.70	7.50	mA
			$V_+ = 5.0V$, 8Ω Load		4.75	8.00	
			$V_+ = 3.3V$, No Load		3.87	5.80	
			$V_+ = 3.3V$, 8Ω Load		3.90	6.00	
			$V_+ = 2.6V$, No Load		3.20		
			$V_+ = 2.6V$, 8Ω Load		3.22		
Shutdown Voltage Input High	V_{SDIH}			1.2			V
Shutdown Voltage Input Low	V_{SDIL}					0.4	
Output Power (8Ω)	P_O	$f = 1\text{kHz}$ THD+N = 1%	$V_+ = 5.0V$		1.30		W
			$V_+ = 3.6V$		0.65		
			$V_+ = 3.0V$		0.45		
			$V_+ = 2.6V$		0.34		
		$f = 1\text{kHz}$ THD+N = 10%	$V_+ = 5.0V$		1.60		
			$V_+ = 3.6V$		0.82		
			$V_+ = 3.0V$		0.55		
			$V_+ = 2.6V$		0.42		
Output Power (4Ω)	P_O	$f = 1\text{kHz}$ THD+N = 1% SGM4895YDB8 only	$V_+ = 5.0V$		1.60		W
			$V_+ = 3.6V$		1.00		
			$V_+ = 3.0V$		0.65		
			$V_+ = 2.6V$		0.50		
		$f = 1\text{kHz}$ THD+N = 10% SGM4895YDB8 only	$V_+ = 5.0V$		2.20		
			$V_+ = 3.6V$		1.25		
			$V_+ = 3.0V$		0.85		
			$V_+ = 2.6V$		0.60		
Total Harmonic Distortion + Noise	THD+N	$P_O = 0.6W_{rms}$, $f = 1\text{kHz}$, $V_+ = 5.0V$			0.015		%
Power Supply Rejection Ratio ^{(1) (2)}	PSRR	$f = 217\text{Hz}$	$V_+ = 5.0V$		-83		dB
			$V_+ = 3.6V$		-80		
			$V_+ = 3.0V$		-73		
			$V_+ = 2.6V$		-65		
		$f = 1\text{kHz}$	$V_+ = 5.0V$		-83		
			$V_+ = 3.6V$		-80		
			$V_+ = 3.0V$		-73		
			$V_+ = 2.6V$		-65		
Common Mode Rejection Ratio ⁽²⁾	CMRR	$f = 217\text{Hz}$, $V_{CM} = 200mV_{P-P}$, $V_+ = 5.0V$			-76		dB
Wake-Up Time	T_{WU}	$C_B = 1\mu\text{F}$	$V_+ = 5.0V$		50		ms
			$V_+ = 3.6V$		42		
			$V_+ = 3.0V$		37		
			$V_+ = 2.6V$		32		

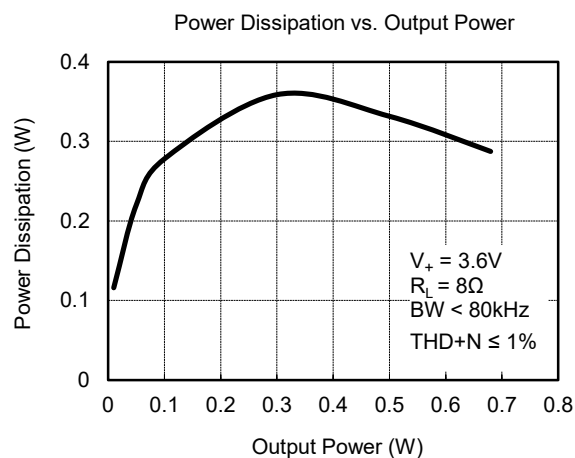
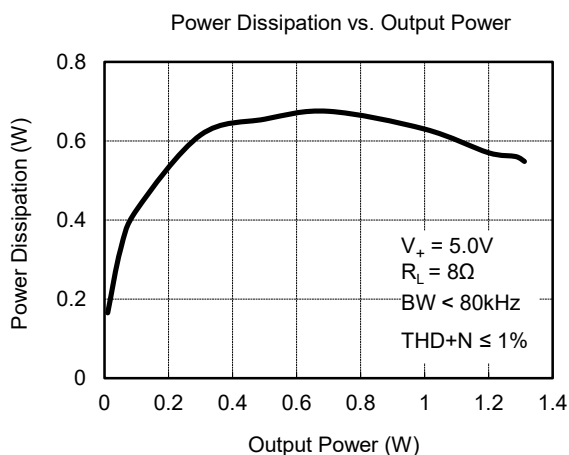
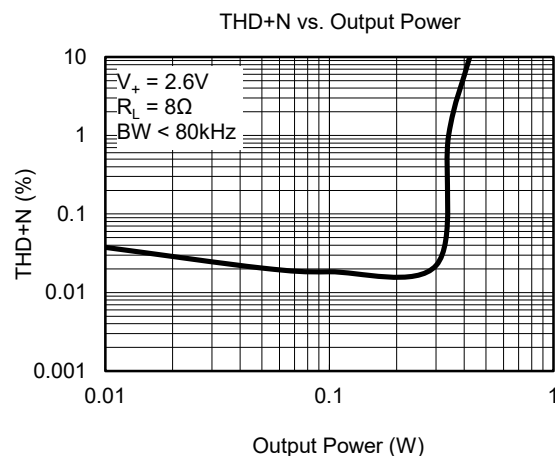
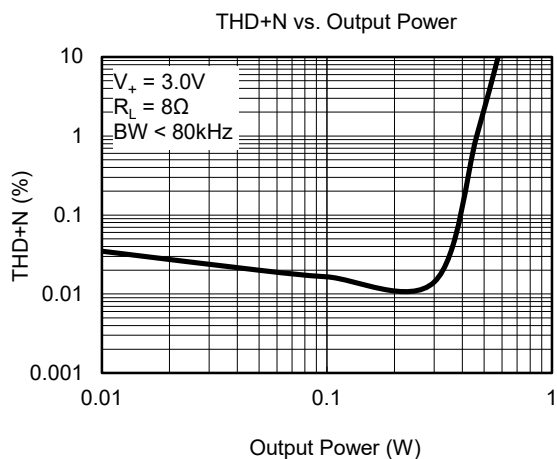
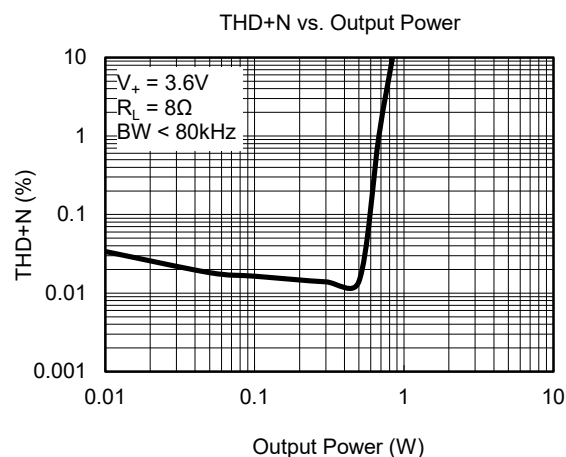
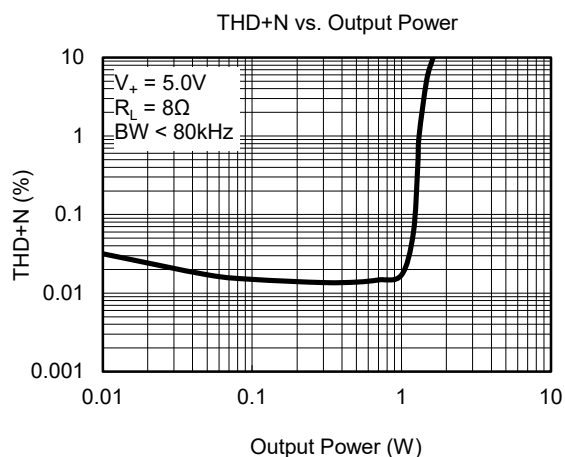
NOTES:

1. 10Ω terminated input.

2. PSRR and CMRR are affected by the matching between gain-setting resistor ratios.

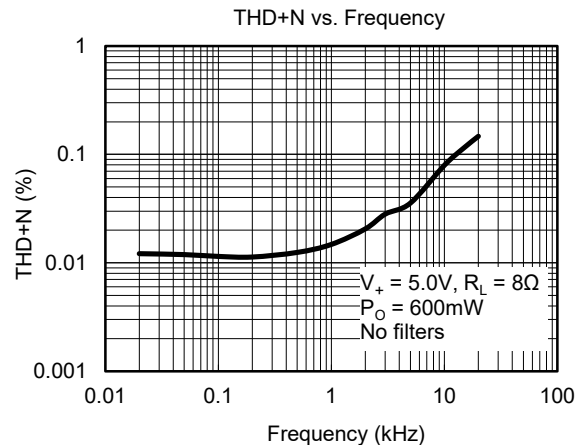
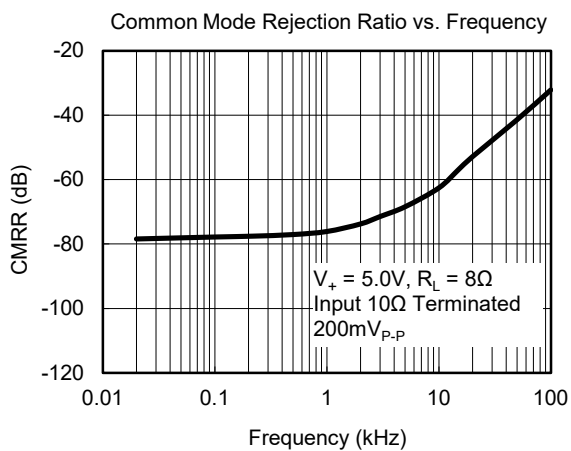
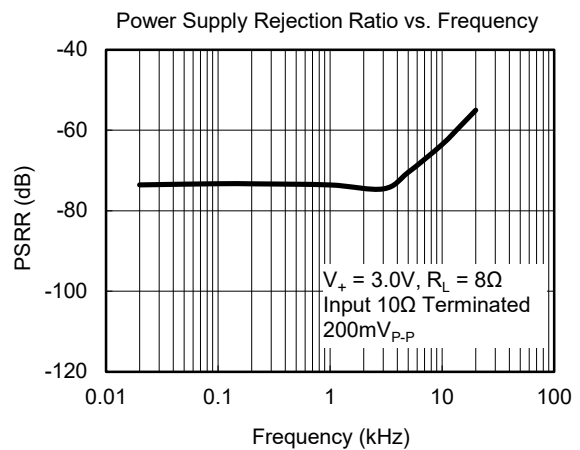
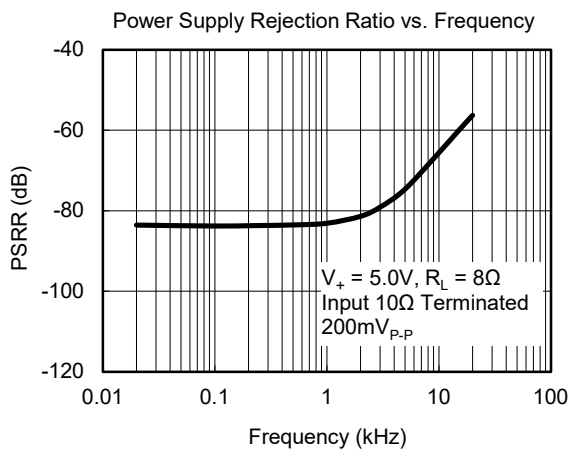
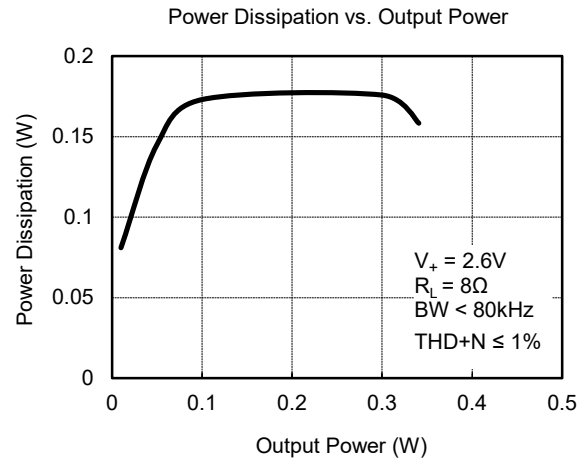
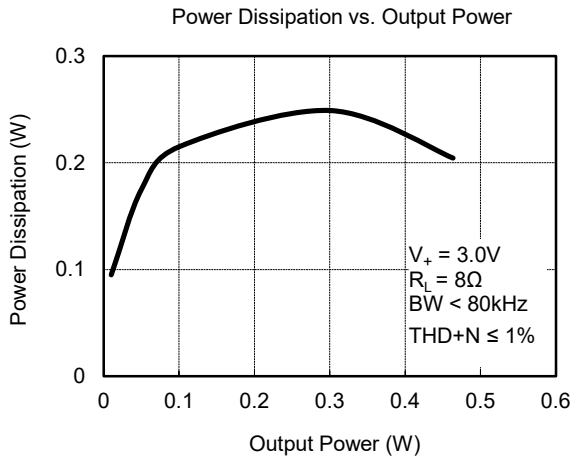
TYPICAL PERFORMANCE CHARACTERISTICS

At $T_A = +25^\circ\text{C}$, $A_V = 1$, $f = 1\text{kHz}$, $C_B = 1\mu\text{F}$, unless otherwise noted.



TYPICAL PERFORMANCE CHARACTERISTICS (continued)

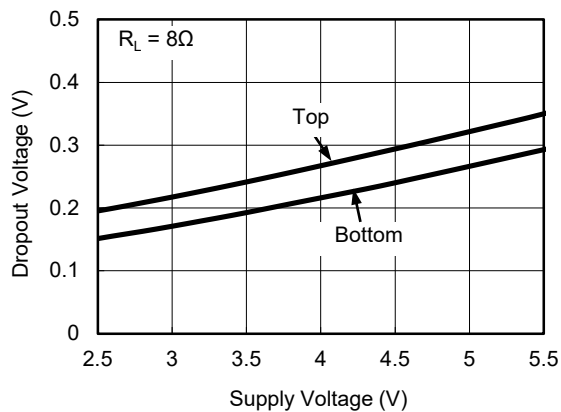
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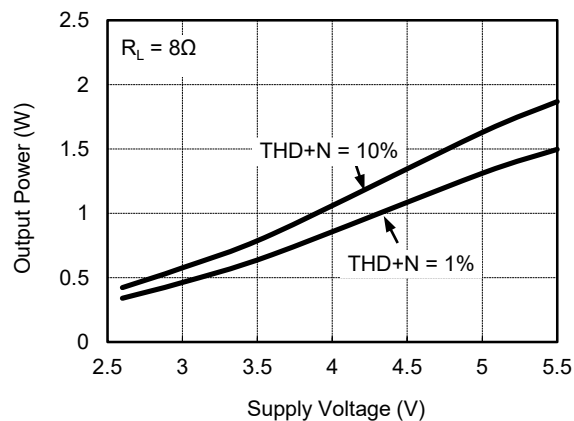
TYPICAL PERFORMANCE CHARACTERISTICS (continued)

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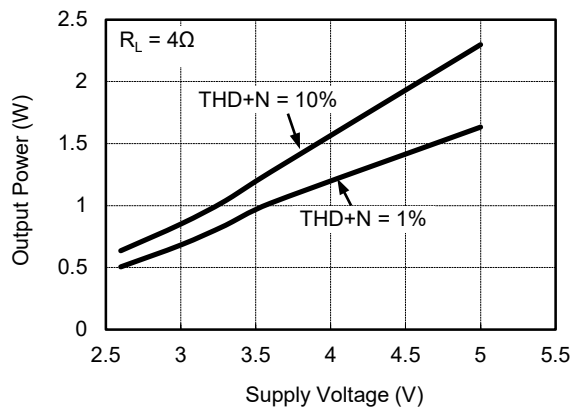
Clipping (Dropout) Voltage vs. Supply Voltage



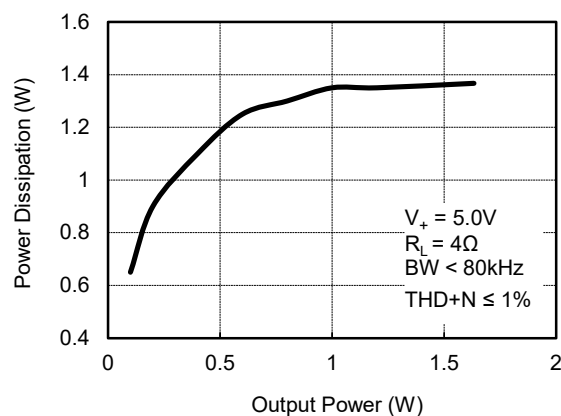
Output Power vs. Supply Voltage



Output Power vs. Supply Voltage



Power Dissipation vs. Output Power



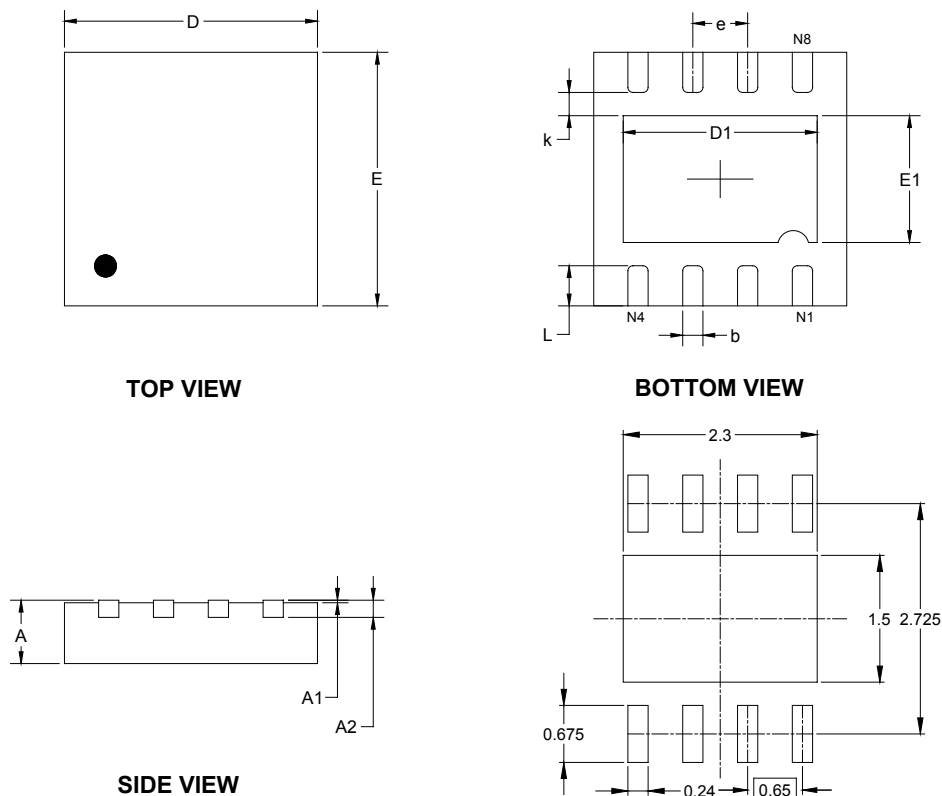
REVISION HISTORY

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

NOVEMBER 2020 – REV.C.2 to REV.C.3		Page
Added Typical Thermal Resistance		2
MARCH 2017 – REV.C.1 to REV.C.2		Page
Updated PACKAGE/ORDERING INFORMATION		2
NOVEMBER 2012 – REV.C to REV.C.1		Page
Added note for Typical Application Circuits.....		7, 8

PACKAGE OUTLINE DIMENSIONS

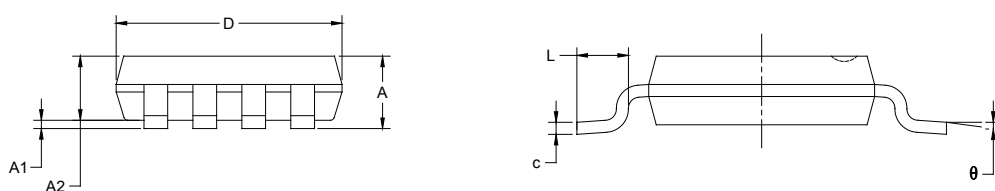
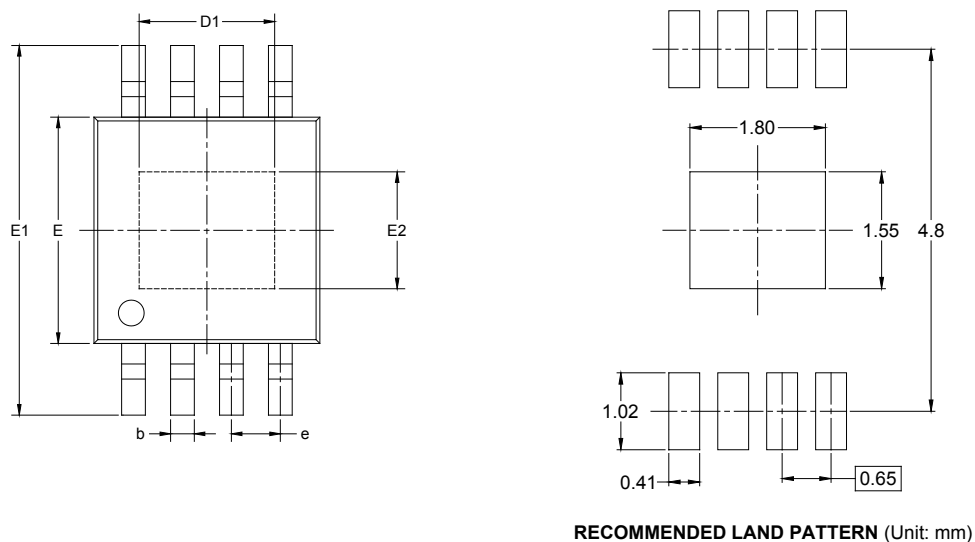
TDFN-3×3-8L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	2.900	3.100	0.114	0.122
D1	2.200	2.400	0.087	0.094
E	2.900	3.100	0.114	0.122
E1	1.400	1.600	0.055	0.063
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.650 TYP		0.026 TYP	
L	0.375	0.575	0.015	0.023

PACKAGE OUTLINE DIMENSIONS

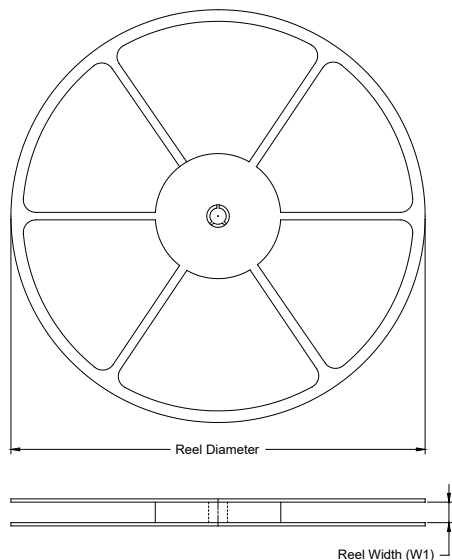
MSOP-8 (Exposed Pad)



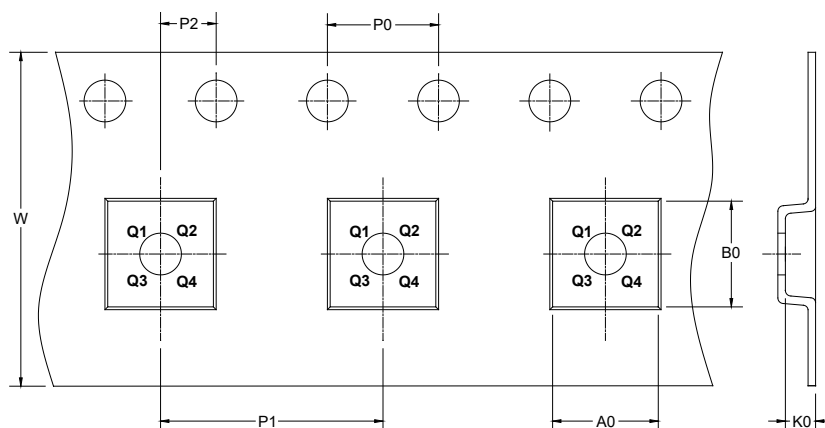
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
D1	1.700	1.900	0.067	0.075
e	0.65 BSC		0.026 BSC	
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
E2	1.450	1.650	0.057	0.065
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



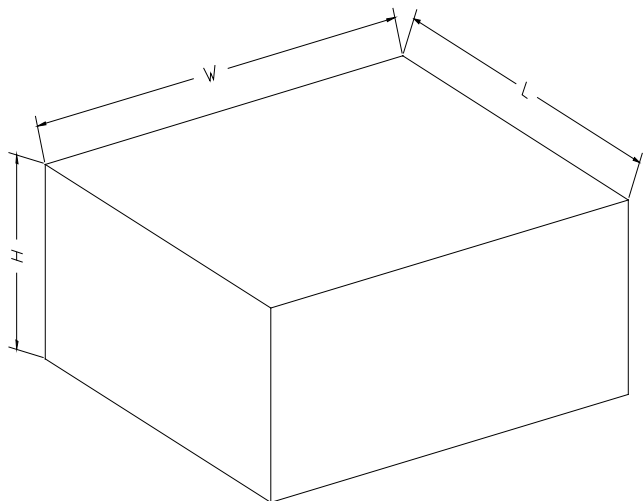
➔ DIRECTION OF FEED

NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
TDFN-3×3-8L	13"	12.4	3.35	3.35	1.13	4.0	8.0	2.0	12.0	Q1
MSOP-8 (Exposed Pad)	13"	12.4	5.20	3.30	1.50	4.0	8.0	2.0	12.0	Q1

DD0001

CARTON BOX DIMENSIONS

NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF CARTON BOX

Reel Type	Length (mm)	Width (mm)	Height (mm)	Pizza/Carton
7" (Option)	368	227	224	8
7"	442	410	224	18

DD0002