TECHNICAL INFORMATION

TK10565/6/9M
(Introduction of Audio Power Amplifier)

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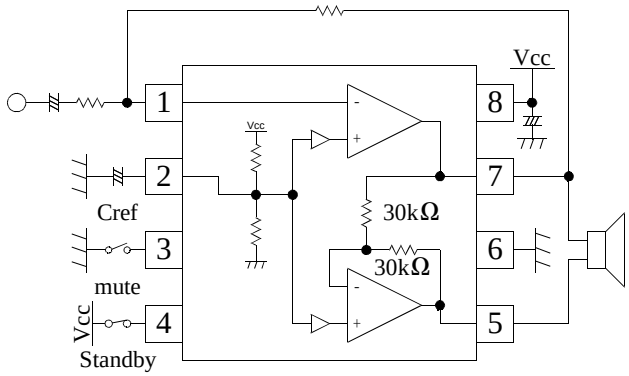
MEETING YOUR NEEDS
TOKO, INC.

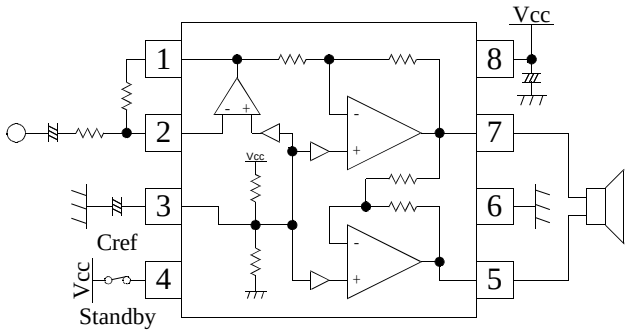
1. Description

The TK10565/6/9/M is an audio power amplifier IC capable of low voltage operation. The coupling capacitors to the speaker are not required, because of BTL(Bridged Tied Load) configuration. Built-in stand-by function can reduce supply current at stand-by mode. Therefore, it is suitable for any battery-powered portable equipment.

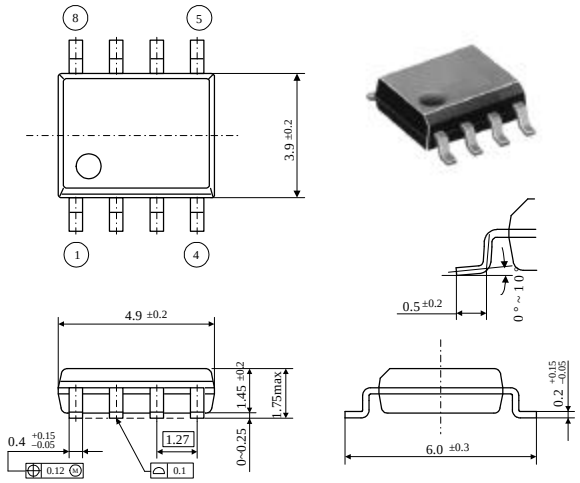
Block Diagram / TK10565M, TK10569M



Block Diagram / TK10566M

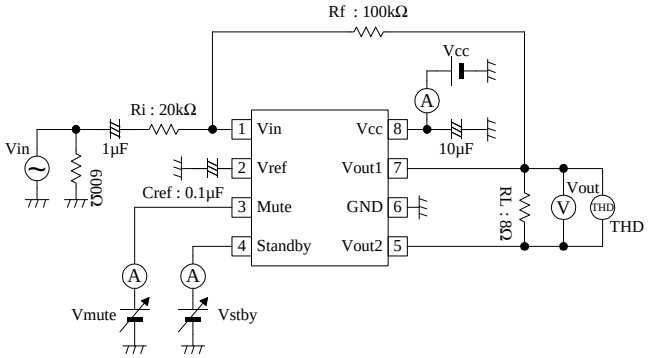
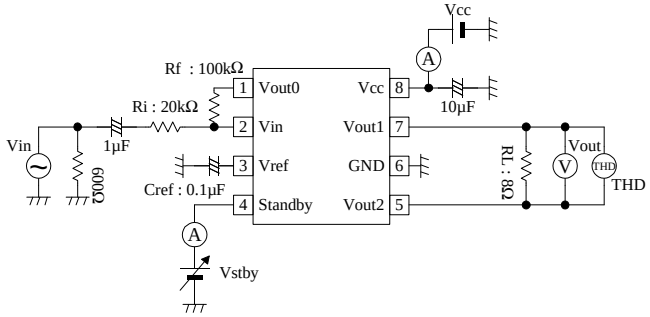


Package Outline / SOP-8



Unit : mm

2. Electrical Characteristics

Test Circuit / TK10565M, TK10569M	Test Circuit / TK10566M
	

TK10565M

V_{CC}= 3.3V; V_{STBY}≥ 1.6V; V_{MUTE}≥ 1.0V; R_I= 20kΩ; R_F= 100kΩ; C_{REF}= 0.1µF; R_L= 8Ω; f_{IN}= 1kHz; Ta= 25°C, unless otherwise specified.

Parameter	Symbol	Value			Units	Conditions
		MIN	TYP	MAX		
Operating Voltage Range	Vop	1.8		6.0	V	
Supply Current 1	$I_{CC}1$		4.5		mA	no signal,R_L= ∞
Standby Supply Current	I_{CCS}		18		µA	V_{STBY}= 0V
High level Input Voltage (Standby)	$V_{STBY}H$	1.6			V	at operating mode
Low level Input Voltage (Standby)	$V_{STBY}L$	0.0		0.4	V	at stand-by mode
Input Current (Standby)	I_{STBY}		62		µA	V_{STBY}=3.3V
High level Input Voltage (Mute)	$V_{MUTE}H$	1.0			V	mute off
Low level Input Voltage (Mute)	$V_{MUTE}L$	0.0		0.2	V	mute on
Input Current (Mute)	I_{MUTE}		22		µA	V_{MUTE}= 0V
Total Harmonic Distortion 1	THD1		0.5		%	R_L=8Ω,V_O=3dBV
Output Power 1	$P_{OM}1$		400		mW	R_L=8Ω,THD≤10%
Mute Attenuation	Att		90		dB	R_L= ∞
Output Voltage 1	$V_{ODC}1$		1.67		V	R_L= ∞
Output Voltage 2	$V_{ODC}2$		1.67		V	R_L= ∞
Output Offset Voltage	V_{OO}		-1		mV	$V_{ODC}2$-$V_{ODC}1$

TK10566M

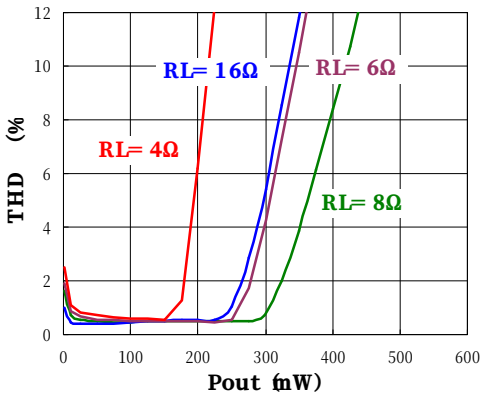
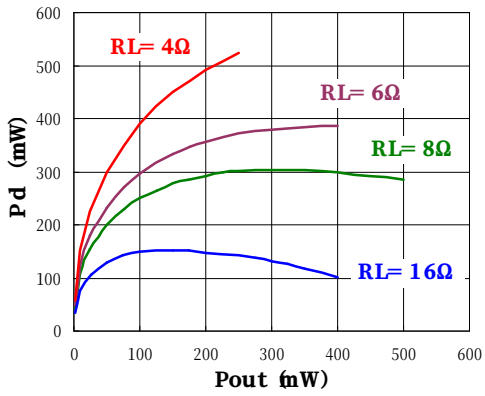
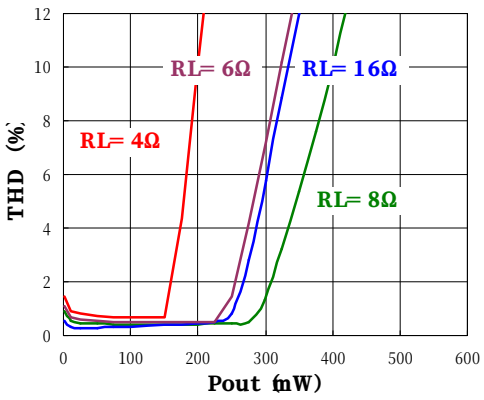
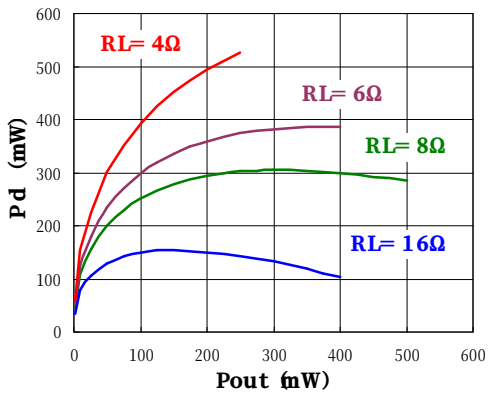
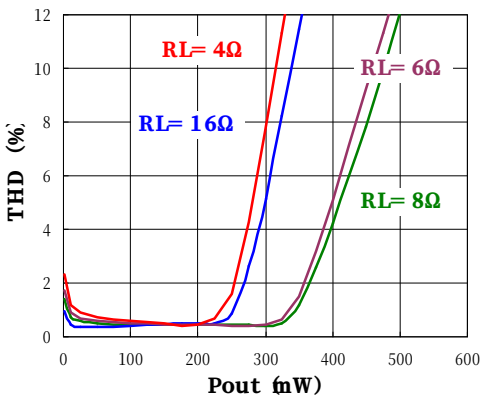
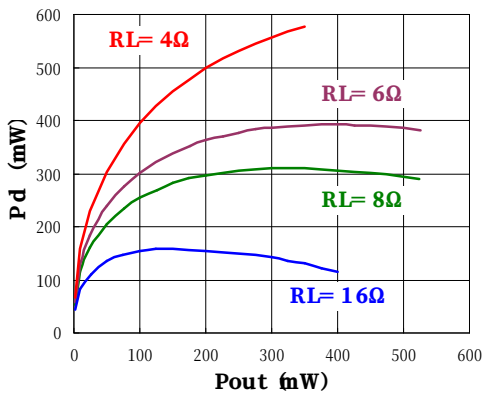
V_{CC}= 3.3V; V_{STBY}≥ 1.6V; R_I= 20kΩ; R_F= 100kΩ; C_{REF}= 0.1µF; R_L= 8Ω; f_{IN}= 1kHz; Ta= 25°C, unless otherwise specified.

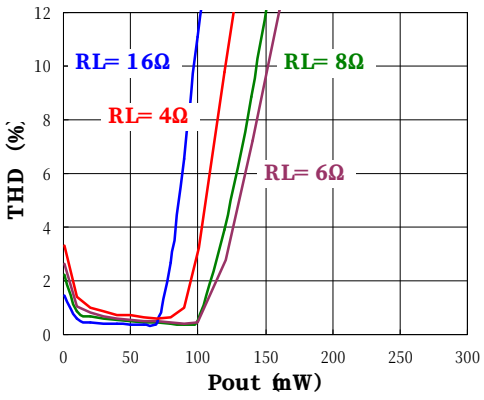
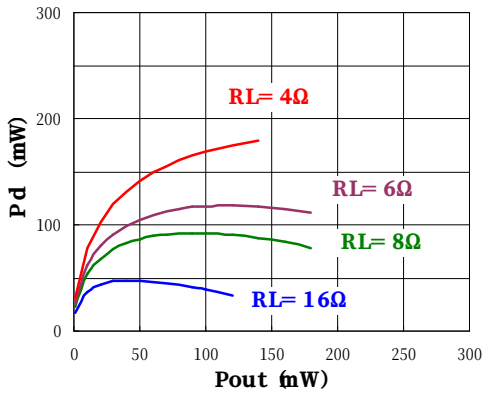
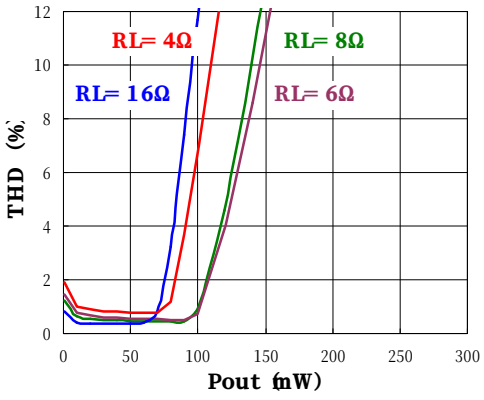
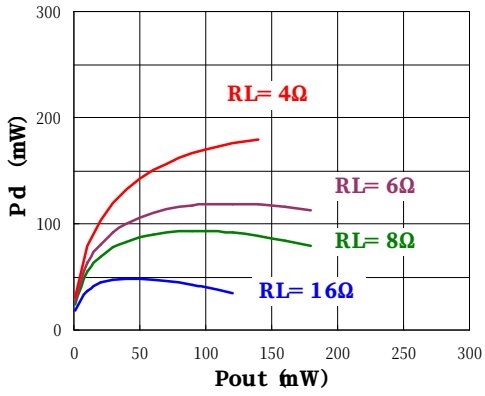
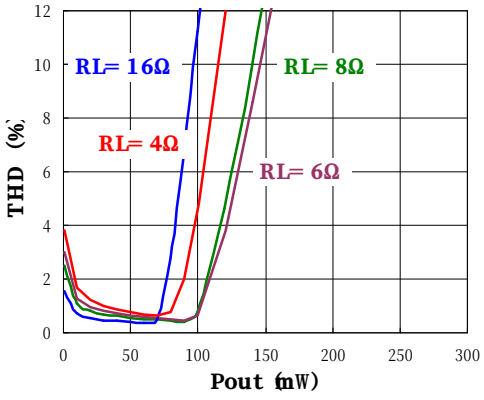
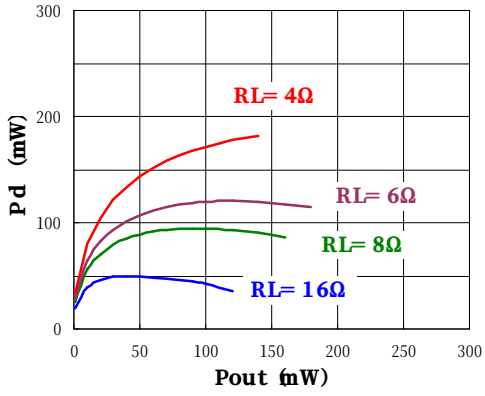
Parameter	Symbol	Value			Units	Conditions
		MIN	TYP	MAX		
Operating Voltage Range	Vop	1.8		6.0	V	
Supply Current 1	$I_{CC}1$		5.2		mA	no signal,R_L= ∞
Standby Supply Current	I_{CCS}		18		µA	V_{STBY}= 0V
High level Input Voltage (Standby)	$V_{STBY}H$	1.6		Vcc	V	at operating mode
Low level Input Voltage (Standby)	$V_{STBY}L$	0.0		0.4	V	at stand-by mode
Input Current (Standby)	I_{STBY}		62		µA	V_{STBY}=3.3V
Total Harmonic Distortion 1	THD1		0.45		%	R_L=8Ω,V_O=3dBV
Output Power 1	$P_{OM}1$		400		mW	R_L=8Ω,THD≤10%
Output Voltage 1	$V_{ODC}1$		1.67		V	R_L= ∞
Output Voltage 2	$V_{ODC}2$		1.67		V	R_L= ∞
Output Offset Voltage	V_{OO}		6		mV	$V_{ODC}2$-$V_{ODC}1$

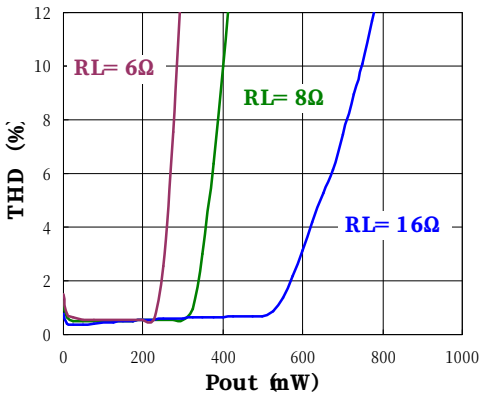
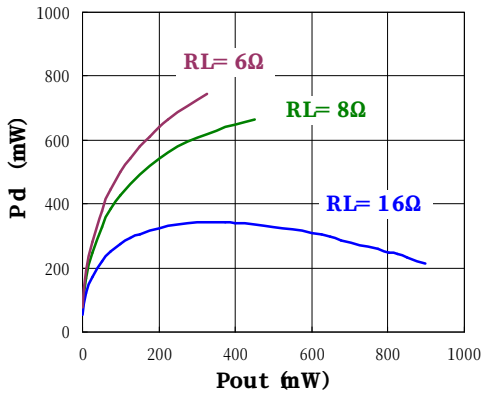
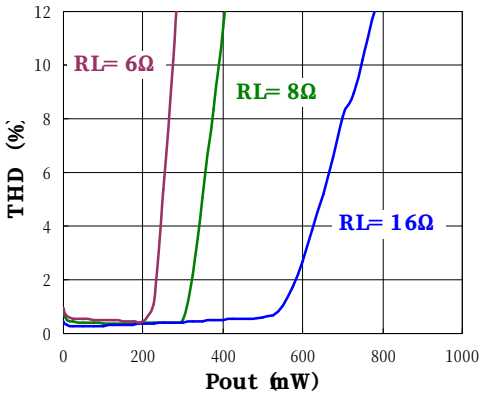
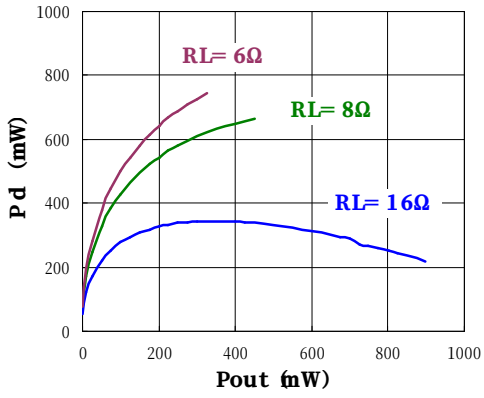
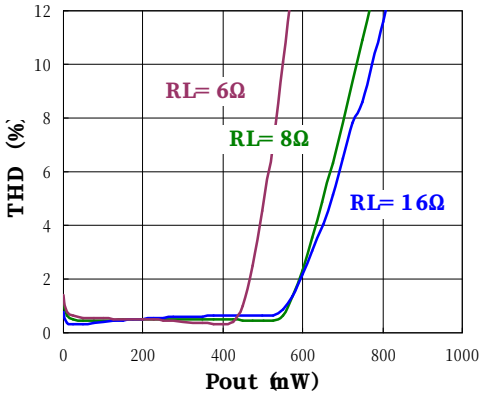
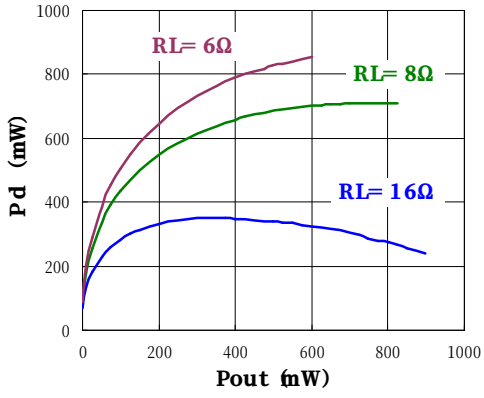
TK10569M

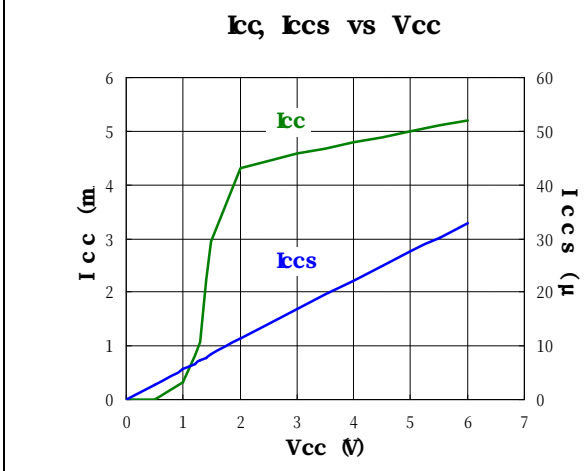
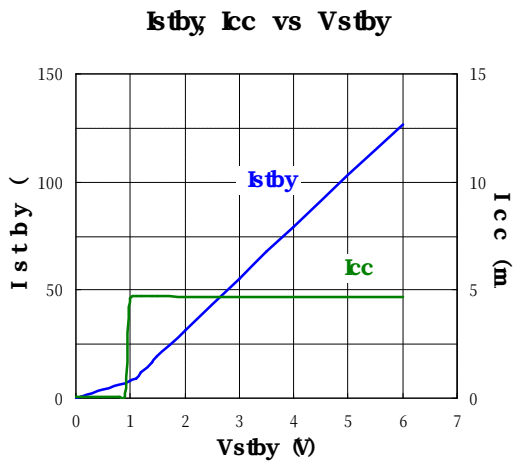
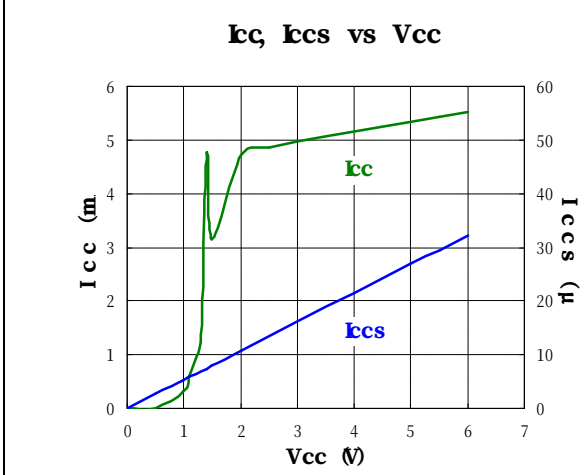
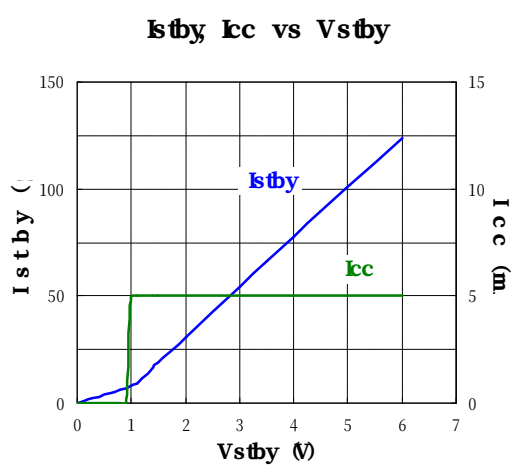
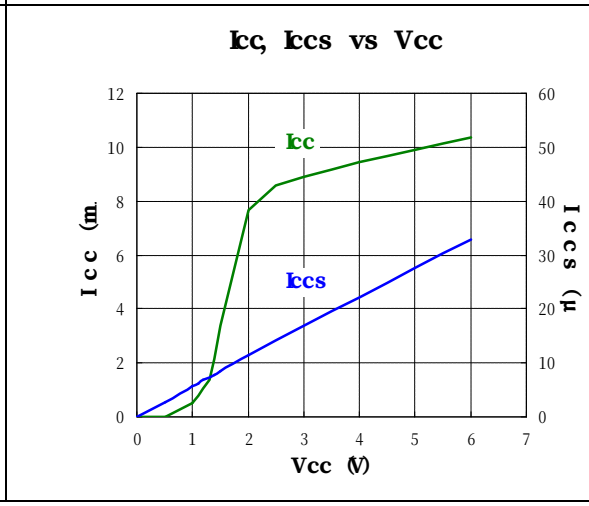
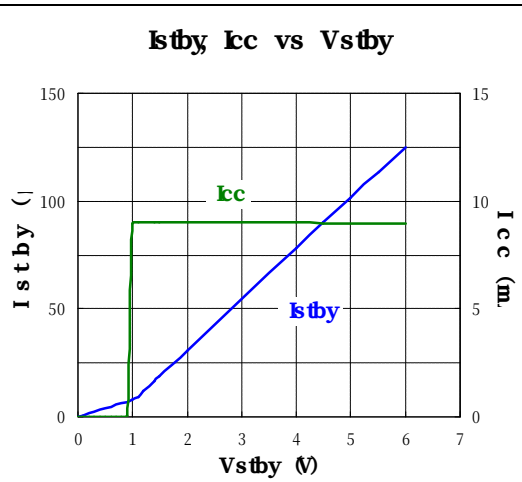
V_{CC}= 3.3V; V_{STBY}≥ 1.6V; V_{MUTE}≥ 1.0V; R_I= 20kΩ; R_F= 100kΩ; C_{REF}= 0.1µF; R_L= 8Ω; f_{IN}= 1kHz; Ta= 25°C, unless otherwise specified.

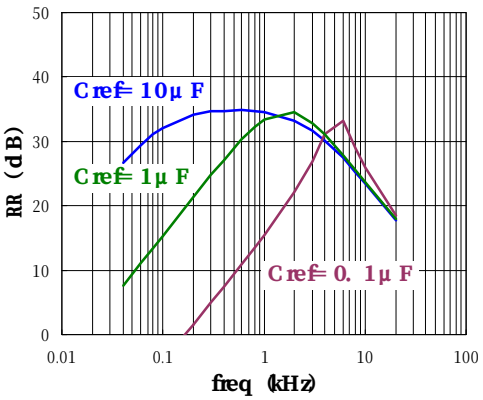
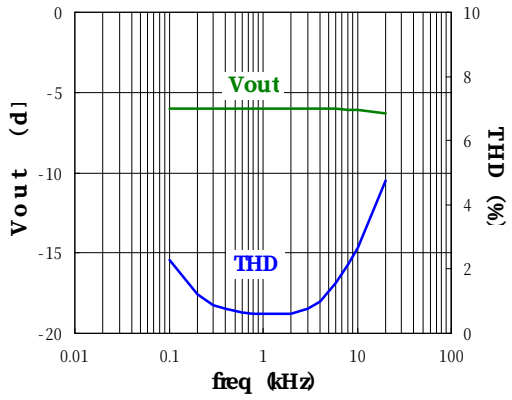
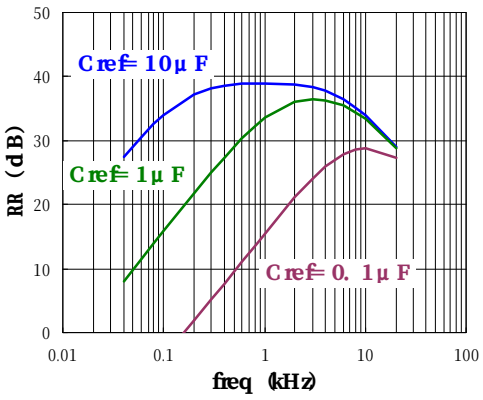
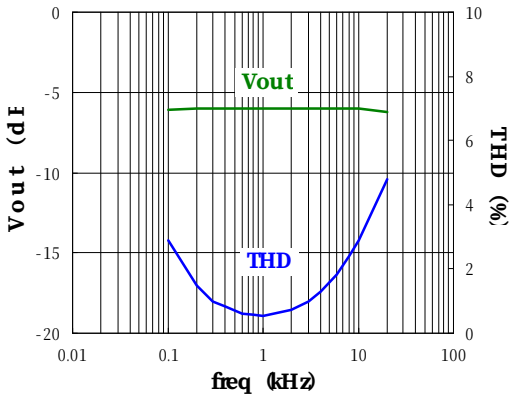
Parameter	Symbol	Value			Units	Conditions
		MIN	TYP	MAX		
Operating Voltage Range	Vop	1.8		6.0	V	
Supply Current 1	$I_{CC}1$		9.0		mA	no signal,R_L= ∞
Standby Supply Current	I_{CCS}		18		µA	V_{STBY}= 0V
High level Input Voltage (Standby)	$V_{STBY}H$	1.6		Vcc	V	at operating mode
Low level Input Voltage (Standby)	$V_{STBY}L$	0.0		0.4	V	at stand-by mode
Input Current (Standby)	I_{STBY}		62		µA	V_{STBY}=3.3V
High level Input Voltage (Mute)	$V_{MUTE}H$	1.0		Vcc	V	mute off
Low level Input Voltage (Mute)	$V_{MUTE}L$	0.0		0.2	V	mute on
Input Current (Mute)	I_{MUTE}		22		µA	V_{MUTE}= 0V
Total Harmonic Distortion 1	THD1		0.5		%	R_L=8Ω,V_O=3dBV
Output Power 1	$P_{OM}1$		450		mW	R_L=8Ω,THD≤10%
Mute Attenuation	Att		90		dB	R_L= ∞
Output Voltage 1	$V_{ODC}1$		1.67		V	R_L= ∞
Output Voltage 2	$V_{ODC}2$		1.67		V	R_L= ∞
Output Offset Voltage	V_{OO}		-1		mV	$V_{ODC}2$-$V_{ODC}1$

	THD vs Pout Vcc = 3.3V, fin = 1kHz, THD ≤ 10%	Pd vs Pout Vcc = 3.3V, fin = 1kHz, THD ≤ 10%
TK10565M		
TK10566M		
TK10569M		

	THD vs Pout Vcc = 1.8V, fin = 1kHz, THD ≤ 10%	Pd vs Pout Vcc = 1.8V, fin = 1kHz, THD ≤ 10%
TK10565M		
TK10566M		
TK10569M		

	THD vs Pout Vcc = 5.0V, fin = 1kHz, THD ≤ 10%	Pd vs Pout Vcc = 5.0V, fin = 1kHz, THD ≤ 10%
TK10565M		
TK10566M		
TK10569M		

	Icc, Iccs vs Vcc no signal, RL = ∞	Istby, Icc vs Vstby Vcc = 3.3V, no signal, RL = ∞
TK10565M		
TK10566M		
TK10569M		

	RR vs freq Vcc = 3.3V, Vripple = -20dBV, RL = ∞	Vout, THD vs freq Vcc = 3.3V, Vin = -26dBV, RL = 8Ω
TK10565M		
TK10566M		
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