DUAL DARLINGTON ARRAY CA3036

General-purpose amplifier with two independent low-noise wide-band amplifier channels used in stereo phonograph preamplifier, low-level stereo and single-channel amplifier stages, low-noise emitter-follower differential amplifier, and operational-amplifier driver applications. 10-lead "TO-5" package; Outline No. 1. For schematic diagram, see Fig. 307.

MAXIMUM RATINGS

Device Dissipation (Any one transistor or total for device)	300	mW
For Each Transistor In The Array:		
Collector-to-Emitter Voltage	15	V
Collector-to-Base Voltage	30	V
Emitter-to-Base Voltage	5	V
Collector Current	50	mA
Temperature Range:		
Operating	—55 to 125	°C
Storage	—65 to 200	°C

TYPICAL CHARACTERISTICS (At ambient temperature = 25°C)

For Each Transistor (Q_1, Q_2, Q_3, Q_4):			
Collector-to-Emitter Breakdown Voltage (I_C = 1 mA, I_B = 0)	$V_{(BR)CEO}$	20	V
Collector-to-Base Breakdown Voltage (I_C = 10 μA, I_E = 0)	$V_{(BR)CBO}$	44	V
Emitter-to-Base Breakdown Voltage (I_E = 10 μA, I_C = 0)	$V_{(BR)EBO}$	6	V
Collector-Cutoff Current:			
V_{CB} = 5V, I_E = 0	I_{CBO}	0.5 max	μA
V_{CE} = 15V, I_B = 0	I_{CEO}	5 max	μA
For Either Input Transistor (Q_1 or Q_3):			
Static Forward Current-Transfer Ratio (I_{C1} or I_{C3} = 1 mA)	h_{FE}	82	
Forward Transfer Admittance (I_{C1} or I_{C3} = 2 mA, f = 50 MHz)	y_{fe}	0.68 + j7.9	mmhos

TYPICAL CHARACTERISTICS (continued)

Input Admittance (Output Short-Circuited) (I_{C1} or I_{C3} = 2 mA, f = 50 MHz)	y_{ie}	4.14 + j5.95	mmhos
Output Admittance (Input Short-Circuited) (I_{C1} or I_{C3} = 2 mA, f = 50 MHz)	y_{oe}	1.94 + j2.64	mmhos
Reverse Transfer Admittance (Input Short-Circuited) (I_{C1} or I_{C3} = 2 mA, f = 50 MHz)	y_{re}	Negligible	mmhos
For Either Darlington Pair (Q_1, Q_2 or Q_3, Q_4):			
Emitter-to-Base Breakdown Voltage (I_{E2} or I_{E4} = 10 μA)	$V_{(BR)EBO(D)}$	12.6	V
Static Forward Current-Transfer Ratio (I_{C1} + I_{C2} or I_{C3} + I_{C4} = 1 mA)	$h_{FE(D)}$	4540	
Small-Signal Forward-Current Transfer Ratio (I_{C1} + I_{C2} or I_{C3} + I_{C4} = 1 mA, f = 1 kHz)	$h_{fe(D)}$	1300	
Small-Signal Input Impedance (I_{C1} + I_{C2} or I_{C3} + I_{C4} = 1 mA, f = 1 kHz)	$h_{ie(D)}$	82	kΩ
Small-Signal Output Admittance (I_{C1} + I_{C2} or I_{C3} + I_{C4} = 1 mA, f = 1 kHz)	$h_{oe(D)}$	108	μmhos
Small-Signal Reverse-Voltage Transfer Ratio (I_{C1} + I_{C2} or I_{C3} + I_{C4} = 1 mA, f = 1 kHz)	$h_{re(D)}$	2.7×10^{-4}	
Voltage Gain (I_{C1} + I_{C2} or I_{C3} + I_{C4} = 1 mA, f = 1 kHz)	$A_{(D)}$	26	dB
Power Gain (I_{C1} + I_{C2} or I_{C3} + I_{C4} = 1 mA, f = 1 kHz)	$G_{p(D)}$	47	dB
Noise Voltage (f = 1 kHz)	E_N	0.05	$\frac{\mu V_{rms}}{\sqrt{f(Hz)}}$
Input Admittance (I_{C1} + I_{C2} or I_{C3} + I_{C4} = 2 mA, f = 50 MHz)	$y_{ie(D)}$	1.71 + j2.8	mmhos
Output Admittance (I_{C1} + I_{C2} or I_{C3} + I_{C4} = 2 mA, f = 50 MHz)	$y_{oe(D)}$	3.96 + j2.6	mmhos
Gain-Bandwidth Product (I_{C1} + I_{C2} or I_{C3} + I_{C4} = 2 mA)	$f_{T(D)}$	200	MHz
For Each Input Transistor Q_1 or Q_3 (I_{C1} or I_{C3} = 1 mA, f = 1 kHz):			
Small-Signal Forward Current-Transfer Ratio	h_{fe}	82	
Small-Signal Input Impedance	h_{ie}	2.6	kΩ
Small-Signal Output Admittance	h_{oe}	7	μmhos
Small-Signal Reverse Voltage-Transfer Ratio	h_{re}	9.8×10^{-4}	