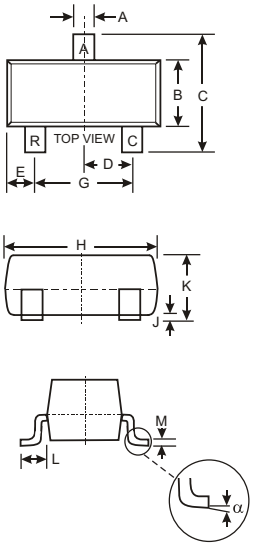
HAICHUANG SEMI

MMTL431

ADJUSTABLE PRECISION SHUNT REGULATOR

Features

- Programmable Output Voltage to 36V.
- Low Dynamic Output Impedance.
- Sink Current Capability of 1.0 mA to 100 mA.
- Low Output Noise Voltage.
- Temperature Compensated for Operation over Full Rated Operationg Temperature Range.
- Marking Code:431



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°
All Dimensions in mm		

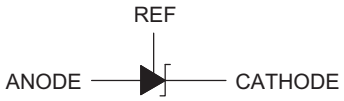
Maximum Ratings @ T_A = 25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Cathode Voltage	V_{KA}	37	V
Cathode Current Range	I_{KA}	- 100 to + 150	mA
Reference Input Current Range	I_{REF}	- 0.05 to + 10	mA
Power Dissipation	P_D	350	mW
Operating Temperature Range	T_{opr}	-40 to 125	°C
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	- 65 to + 150	°C

Recmmended Operating Conditions

Parameter	Symbol	Min.	Max.	Unit
Cathode Voltage	V_{KA}	V_{REF}	36	V
Cathode Current	I_{KA}	1	100	mA

SYMBOL



Electrical Characteristics @ T_A = 25°C unless otherwise specified

Parameter		Symbol	Min.	Typ.	Max.	Unit
Reference Input Voltage at $V_{KA} = V_{REF}$, I_{KA} = 10 mA	0.3%	V_{REF}	2.487	2.495	2.502	V
	0.5%	V_{REF}	2.483	2.495	2.507	V
	1%	V_{REF}	2.470	2.495	2.520	V
	2%	V_{REF}	2.445	2.495	2.545	V
Deviation of Reference Input Voltage Over Temperatue at $V_{KA} = V_{REF}$, I_{KA} = 10 mA, - 25 °C ≤ T_a ≤ + 85 °C		ΔV_{REF} /ΔT	-	4.5	25	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage at I_{KA} = 10 mA	ΔV_{KA} = 10 V to V_{REF} ΔV_{KA} = 36 V to 10 V	$\Delta V_{REF}/\Delta$ V_{KA}	- -	-1.0 -0.5	-2.7 -2	mV/V
Reference Input Current at I_{KA} = 10 mA, R1 = 10 KΩ, R2 = ∞		I_{REF}	-	1.5	4	μA
Deviation of Reference Input Current Over Full Temperatue at I_{KA} = 10 mA, R1 = 10 KΩ, R2 = ∞, - 25°C ≤ T_a ≤ + 85 °C		$\Delta I_{REF}/\Delta T$	-	0.2	0.4	μA
Minimum Cathode Current for Regulation at $V_{KA} = V_{REF}$		$I_{KA(min)}$	-	0.3	0.5	mA
Off-Stage Cathode Current at V_{KA} = 36 V, V_{REF} = 0		$I_{KA(OFF)}$	-	0.05	0.5	μA
Dynamic Impedance at $V_{KA} = V_{REF}$, I_{KA} = 1 to 100 mA, f ≤ 1 KHz		Z_{KA}	-	0.15	0.5	Ω

TYPICAL TRANSIENT CHARACTERISTICS

Fig 1 Cathode Current Vs Cathode Voltage

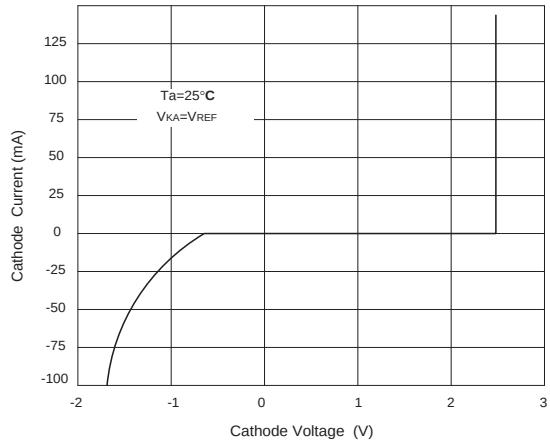


Fig 2 Cathode Current Vs Cahode Voltage

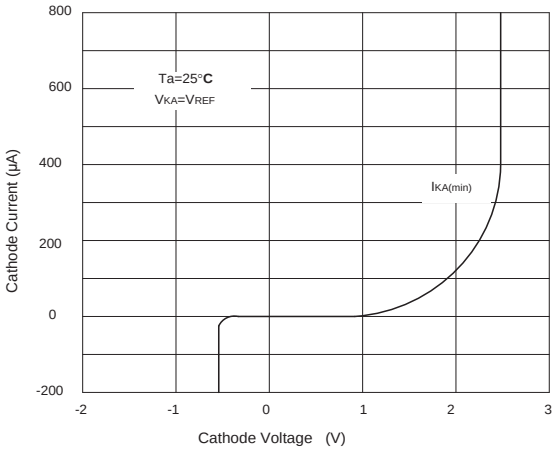


Fig 3 Change in Reference Input Voltage Vs Cathode voltage

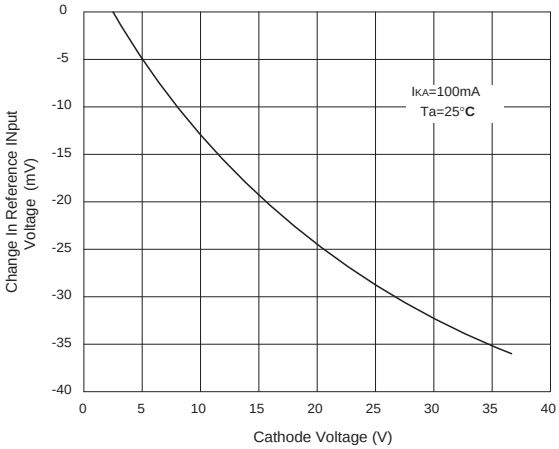
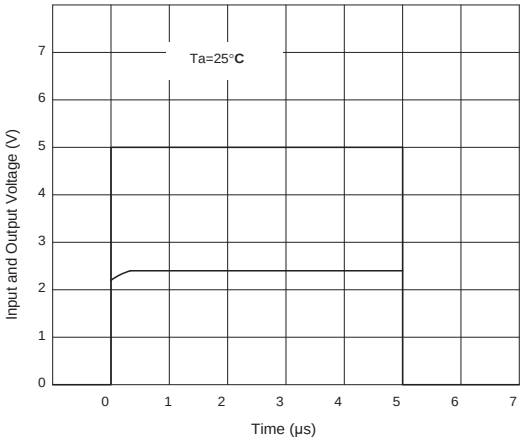


Fig 4 Pulse Response



TYPICAL TRANSIENT CHARACTERISTICS

Fig 5 Dynamic Impedance Vs Frequency

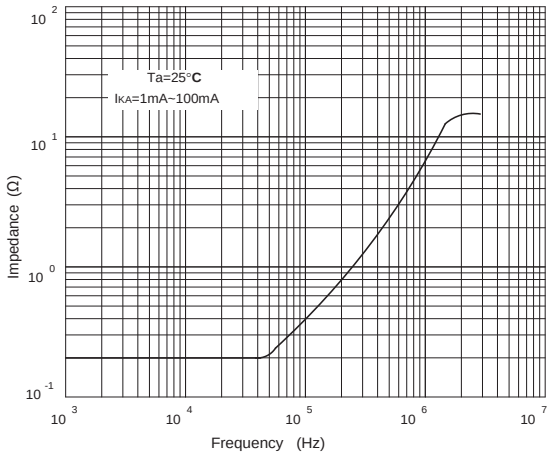


Fig 6 Small Signal Voltage Amplification Vs Frequency

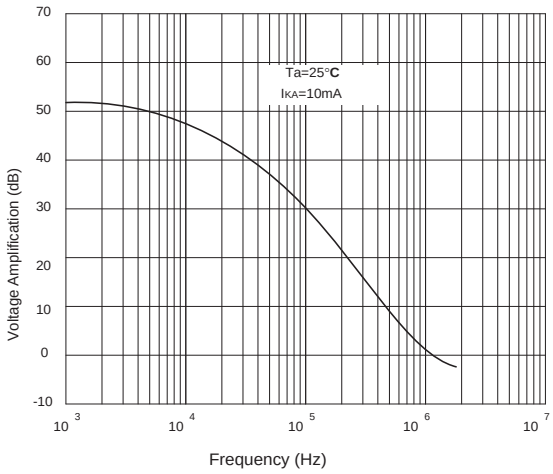
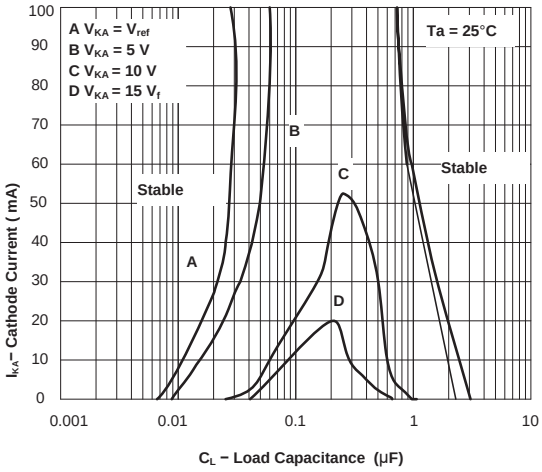


Fig 7 Cathode Current Vs Load Capacitance



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