Aimtron
圓創科技股份有限公司

AT1504

Preliminary Product Information

FET BIAS CONTROLLER

Features

- Provides bias for GaAs and HEMT FETs
- Drives up to four FETs
- Dynamic FET protection
- Drain current set by external resistor
- Regulated negative rail generator requires only 2 external capacitors
- Choice in drain voltage
- Wide supply voltage range
- SSOP surface mount package

Applications

- Satellite receiver LNBs
- Private mobile radio (PMR)
- Cellular telephones

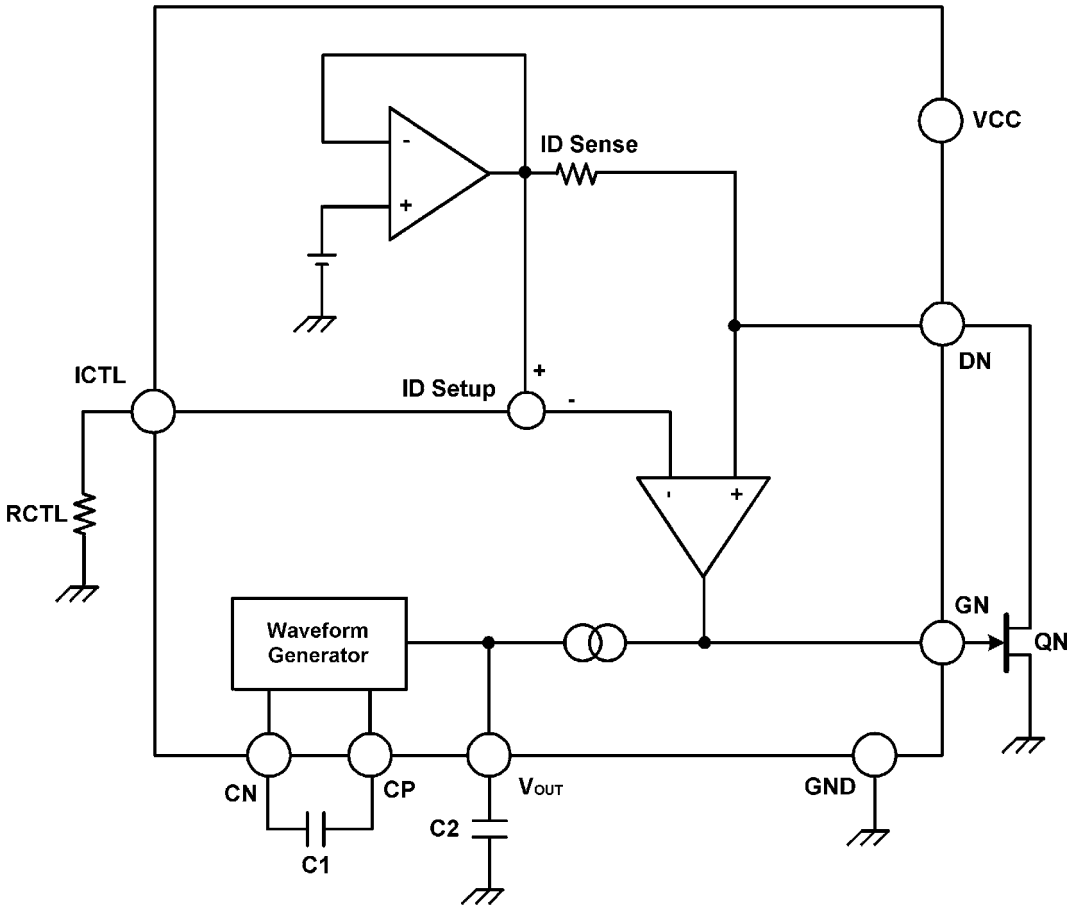
Description

The AT1504 is designed to meet the bias requirements of GaAs and HEMT FETs commonly used in satellite receiver LNBs, PMR, cellular telephones etc. with a minimum of external components.

With the addition of two capacitors and resistors the devices provide drain voltage and current control for a number of external grounded source FETs.

The AT1504 is available in SSOP16 pin packages respectively for the minimum in devices size. Device operating temperature is -40 to 70°C to suit a wide range of environmental conditions.

Block Diagram



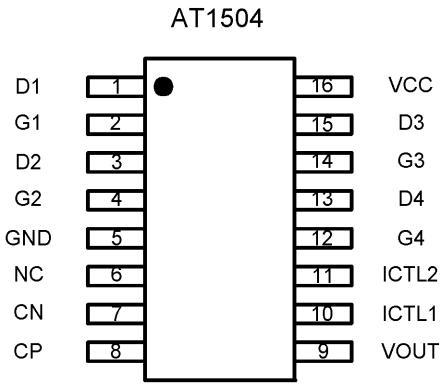
Aimtron reserves the right without notice to change this circuitry and specifications.

2F, No.10, Prosperity RD. II, Science-Based Industrial Park, Hsinchu 300,Taiwan, R.O.C.
Tel: 886-3-563-0878 http://www.aimtron.com.tw
Fax: 886-3-563-0879 Email: service@aimtron.com.tw

Pin Descriptions

Pin No.	Pin name	Function
1	D1	1st Drain output voltage Pin
2	G1	1st Gate output voltage Pin
3	D2	2nd Drain output voltage Pin
4	G2	2nd Gate output voltage Pin
5	GND	Ground Pin
6	NC	No connect Pin
7	CN	Negative OSC output Pin
8	CP	Positive OSC output Pin
9	VOUT	Negative voltage output Pin
10	ICTL1	VD1/VD2 Current set Resistor connect Pin
11	ICTL2	VD3/VD4 Current set Resistor connect Pin
12	G4	4th Gate output voltage Pin
13	D4	4th Drain output Pin
14	G3	3rd Gate output voltage Pin
15	D3	3rd Drain output voltage Pin
16	VCC	Supply voltage Pin

Pin Configuration



Ordering Information

Part number	Package	Marking
AT1504R	**SSOP16**	**AT1504R**
AT1504R_GRE	**SSOP16,Green**	**AT1504R, date code with one bottom line**

Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	unit
Power supply voltage	V_{CC}	-0.6~15	V
Supply Current	I_{CC}	100	mA
Drain Current	V_D	0~15	mA
Operating temperature	T_{opr}	-40~+70	°C
Storage temperature	T_{stg}	-50~+85	°C
Power dissipation	P_d	500	mW

Recommended operating conditions (Ta = 25°C)

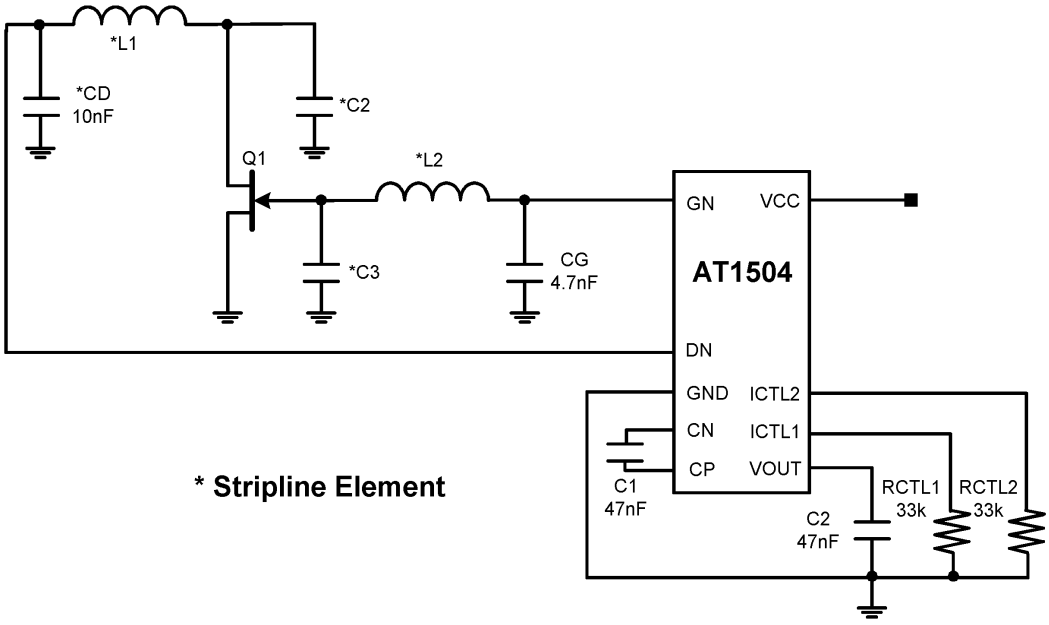
Parameter	Symbol	Limits	unit
Power supply voltage	V_{CC}	5~12	V

Electrical characteristics

(Unless otherwise stated, Ta=25°C, V_{CC}=5V, I_D=10mA, R_{CTL1}=33kΩ, R_{CTL2} =33kΩ)

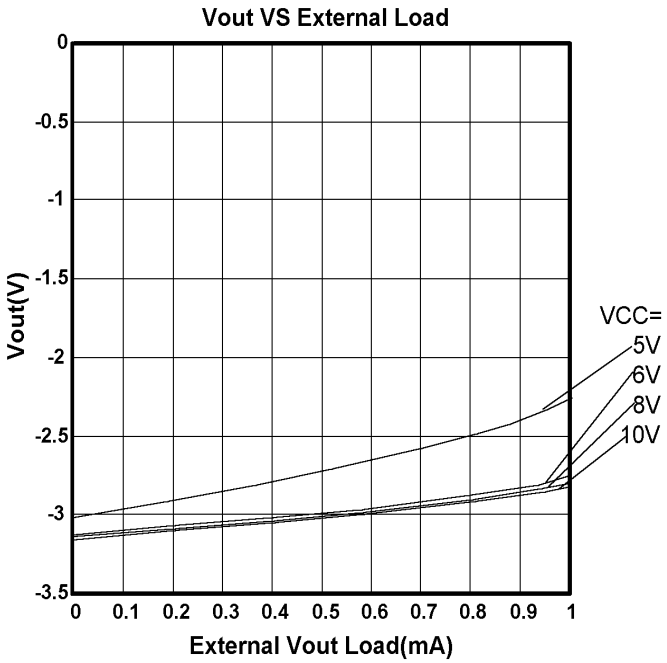
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Supply Voltage	V_{CC}	5	--	12	V	
Supply Current	I_{CC}	--	--	10	mA	I_{D1} to I_{D4}=0
		--	--	50	mA	I_{D1} to I_{D4}=10mA
Negative Voltage	V_{OUT}	-3.5	-3	-2	V	I_{OUT}= 0
		--	--	-2	V	I_{OUT}= -200μA
Drain Output Noise Voltage	E_{ND}	--	--	0.02	V_{PP}	C_G=4.7nF, C_D=10nF
Gate Output Noise Voltage	E_{NG}	--	--	0.005	V_{PP}	C_G=4.7nF, C_D=10nF
Oscillator Freq.	fo	200	350	800	kHz	
DRAIN						
Drain Current	I_D	8	10	12	mA	
Drain Current Charge with V_{CC}	ΔI_{DV}	--	0.02	--	%/V	V_{CC}=5 to 12V
Drain Current Charge with T_j	ΔI_{DT}	--	0.05	--	%/℃	T_j=-40 to +70°C
Drain Voltage	V_D	2	2.2	2.4	V	
Drain Voltage Charge with V_{CC}	ΔV_{DV}	--	0.5	--	%/V	V_{CC}=5 to 12V
Drain Voltage Charge with T_j	ΔV_{DT}	--	50	--	ppm	T_j=-40 to +70°C
GATE						
Gate Output Current Range	I_{GO}	-30	--	2000	μA	
Gate Output Low Voltage	V_{OL}	-3.5	--	-2	V	I_{D1} to I_{D4}=12mA I_{G1} to I_{G4}=0
		-3.5	--	-2	V	I_{D1} to I_{D4}=12mA I_{G1} to I_{G4}= -10μA
Gate Output High Voltage	V_{OH}	0	--	1	V	I_{D1} to I_{D4}= 8mA I_{G1} to I_{G4}= 0

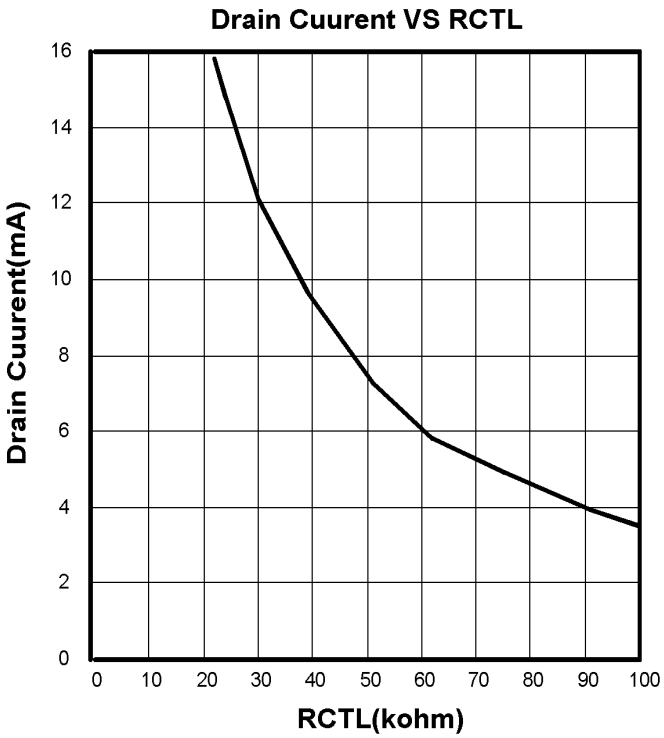
Typical Application Circuit

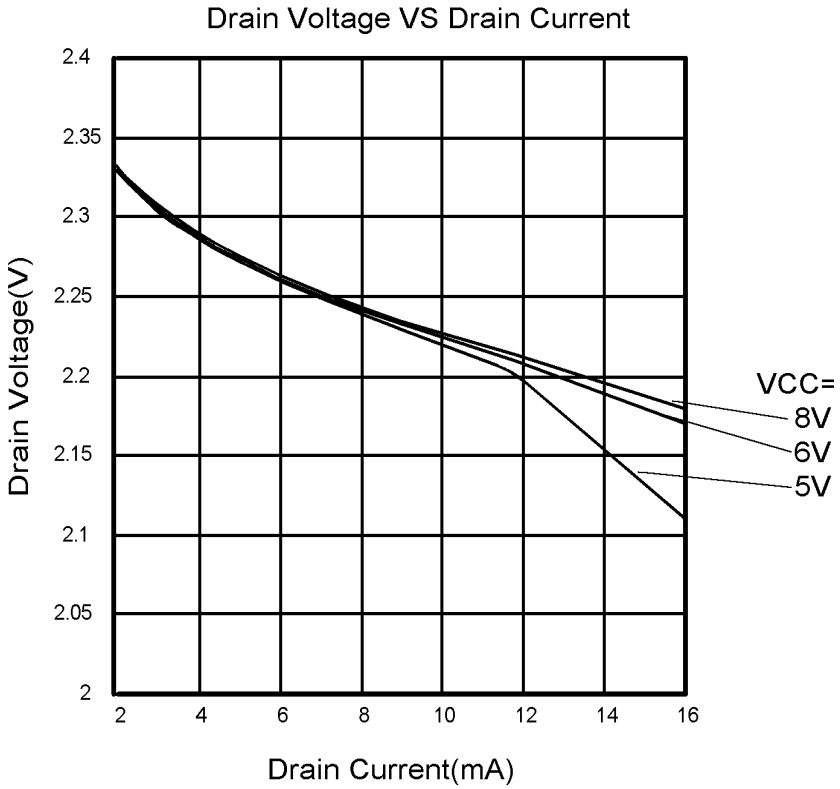


*** Stripline Element**

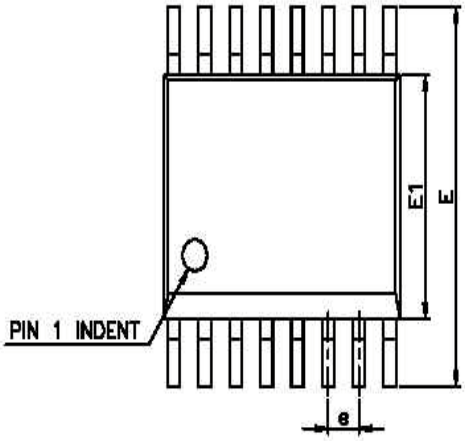
Typical Characteristics

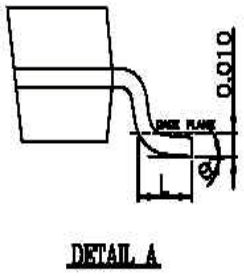


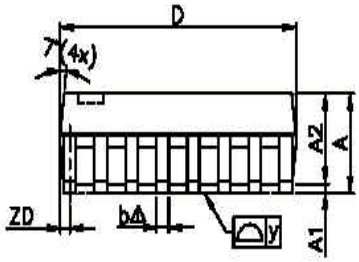

Drain Cuurent VS RCTL
Drain Cuurent(mA)
16
14
12
10
8
6
4
2
0
0
10
20
30
40
50
60
70
80
90
100
RCTL(kohm)

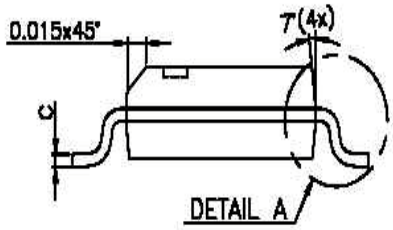

Drain Voltage VS Drain Current
Drain Voltage(V)
2.4
2.35
2.3
2.25
2.2
2.15
2.1
2.05
2
2
4
6
8
10
12
14
16
Drain Current(mA)
VCC=
8V
6V
5V

Package Outlines : 16-pin SSOP









SYMBOL	MILLIMETERS			INCHES		
	MIN	TYP	MAX	MIN	TYP	MAX
A	1.35	1.60	1.75	0.053	0.063	0.069
A1	0.10	0.15	0.25	0.004	0.006	0.010
A2	-	-	1.50	-	-	0.059
b	0.20	-	0.30	0.008	-	0.012
C	0.18	-	0.25	0.007	-	0.010
D	4.80	4.85	5.00	0.189	0.191	0.197
ZD	-	0.20	-	-	0.008	-
E	5.79	5.99	6.20	0.228	0.236	0.244
E1	3.81	3.91	3.99	0.150	0.154	0.157
L	0.41	0.71	1.27	0.016	0.028	0.050
e	-	0.64	-	-	0.025	-
y	-	-	0.076	-	-	0.003
θ	0°		8°	0°		8°