



UDCDP06

Preliminary

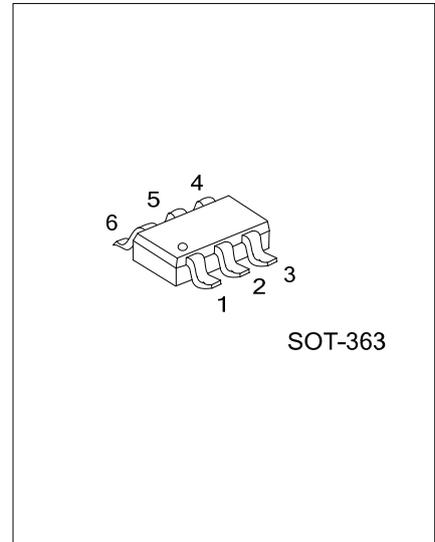
DIODE CONTROLLER

IDEAL DIODE CONTROLLER

DESCRIPTION

The UTC **UDCDP06** is intended to drive a p-channel enhancement MOSFET configured as an ideal diode. The device operates as a differential amplifier and PMOS controller to minimize forward current losses when $V_{IN} > V_{OUT}$ and provide high isolation when $V_{IN} < V_{OUT}$.

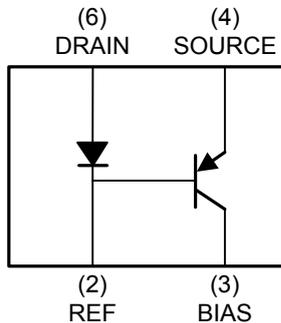
The circuit compares the voltage between IN and OUT. If the differential is greater than ~34mV (typ.) VBIAS will fall and the PMOS will turn on, If the differential is less than ~70mV VBIAS will rise and the PMOS will turn off, isolating IN from OUT.



FEATURES

- * Max Input Voltage: 40V
- * Peak Bias Current: -300mA
- * Max Reverse Voltage Protection: 50V

SYMBOL

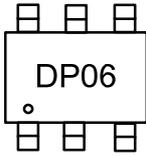


ORDERING INFORMATION

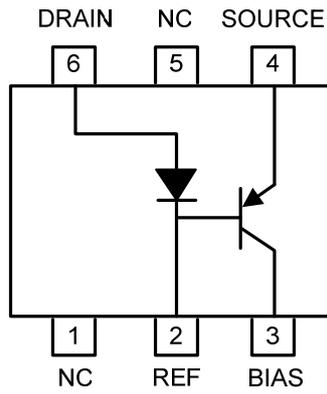
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UDCDP06L-AL6-R	UDCDP06G-AL6-R	SOT-363	Tape Reel

UDCDP06G-AL6-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AL6: SOT-363
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ PIN DESCRIPTION



■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain BIAS Voltage	$V_{\text{DRAIN-BIAS}}$	40	V
SOURCE Drain Voltage	$V_{\text{SOURCE-DRAIN}}$	50	V
BIAS Current	I_{BIAS}	-300	mA
DRAIN Current	I_{DRAIN}	300	mA
Power Dissipation (Note 2)	P_D	300	mW
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. For a device mounted on minimum recommended pad layout with 1oz copper that is on a single-sided 1.6mm FR4 PCB; the device is measured under still air conditions whilst operating in a steady-state.

■ THERMAL DATA

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	424	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	111	$^\circ\text{C/W}$

Note: For a device mounted on minimum recommended pad layout with 1oz copper that is on a single-sided 1.6mm FR4 PCB; the device is measured under still air conditions whilst operating in a steady-state.

■ ELECTRICAL SPECIFICATIONS ($T_A=25^\circ\text{C}$, unless others specified)

TR1 (NPN)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
DRAIN-BIAS Voltage	$V_{\text{DRAIN-BIAS}}$	$I_{\text{DRAIN}}=100\mu\text{A}$	40	114		V
SOURCE-DRAIN Voltage	$V_{\text{SOURCE-DRAIN}}$	$I_{\text{SOURCE}}=100\mu\text{A}$	50	113		V
DRAIN-REF Voltage	$V_{\text{DRAIN-REF}}$	$I_{\text{DRAIN}}=100\mu\text{A}$		595		mV
SOURCE Current	I_{SOURCE}	$V_{\text{SOURCE-REF}}=0.56\text{V}$		6.7		μA
REF-SOURCE Voltage	$V_{\text{REF-SOURCE}}$	$I_{\text{REF}}=-10\mu\text{A}$		-581		mV
Turn-Off Differential Voltage	V_T	$I_{\text{DRAIN}}=100\mu\text{A}, I_{\text{SOURCE}}=10\mu\text{A}$	5	14	80	mV
REF-SOURCE Voltage ($V_{\text{BIAS LOW}}$)	$V_{\text{REF-SOURCE}}$	$V_{\text{BIAS-SOURCE}}=-5\text{V}, I_{\text{BIAS}}=-1\mu\text{A}$	-250	-483		mV
		$V_{\text{BIAS-SOURCE}}=-5\text{V}, I_{\text{BIAS}}=-10\mu\text{A}$	-300	-543		mV
REF-SOURCE Voltage ($V_{\text{BIAS HIGH}}$)	$V_{\text{REF-SOURCE}}$	$V_{\text{BIAS-SOURCE}}=-0.5\text{V}, I_{\text{BIAS}}=-100\mu\text{A}$		-605	-800	mV
		$V_{\text{BIAS-SOURCE}}=-0.5\text{V}, I_{\text{BIAS}}=-1\text{mA}$		-666	-850	mV

Note: Transition frequency of the device.

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