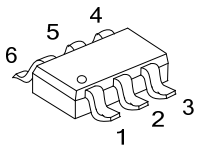
IDEAL DIODE CONTROLLER



SOT-363

■ DESCRIPTION

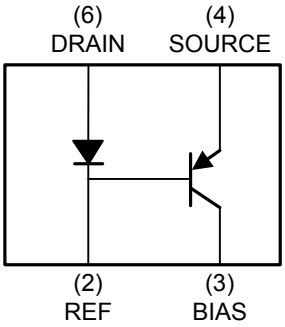
The UTC **UDCDP06** is intended to drive a p-channel enhancement MOSFET configured as an ideal diode. The device operates as a differential amplifier and PMOS controller to minimize forward current losses when $V_{IN} > V_{OUT}$ and provide high isolation when $V_{IN} < V_{OUT}$.

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



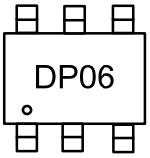
■ ORDERING INFORMATION

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

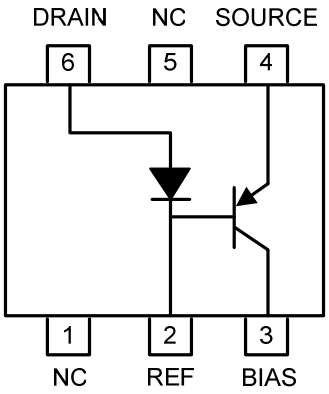
UDCDP06G-AL6-R

(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°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain BIAS Voltage	$V_{DRAIN-BIAS}$	40	V
SOURCE Drain Voltage	$V_{SOURCE-DRAIN}$	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	°C
Storage Temperature	T_{STG}	-55 ~ +150	°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	°C/W
Junction to Case	θ_{JC}	111	°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°C, unless others specified)

TR1 (NPN)

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

Note: Transition frequency of the device.