



## UTP2012Z

Preliminary

PNP EPITAXIAL SILICON TRANSISTOR

### 60V PNP LOW SATURATION MEDIUM POWER TRANSISTOR

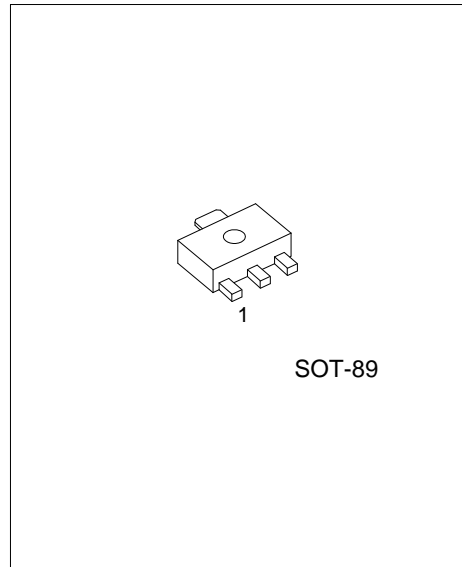
#### DESCRIPTION

The **UTP2012Z** is an PNP low  $V_{CE(SAT)}$  Breakthrough In Small Signal (BISS) transistor in a medium power.

NPN complement: UTN2010Z.

#### FEATURES

- \* Very low collector-emitter saturation voltage  $V_{CE(SAT)}$
- \* High collector current capability  $I_C$  and  $I_{CM}$
- \* High collector current gain ( $h_{FE}$ ) at high  $I_C$
- \* High energy efficiency due to less heat generation
- \* Smaller required Printed-Circuit Board (PCB) area than for conventional transistors



SOT-89

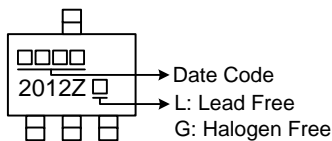
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTP2012ZL-AB3-R	UTP2012ZG-AB3-R	SOT-89	B	C	E	Tape Reel

Note: Pin Assignment: B: Base C: Collector E: Emitter

<p>UTP2012ZG-AB3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AB3: SOT-89</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



### ■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>= 25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector to Base Voltage	V <sub>CBO</sub>	-100	V
Collector to Emitter Voltage	V <sub>CEO</sub>	-60	V
Emitter to Base Voltage	V <sub>EBO</sub>	-7	V
Base Current	I <sub>B</sub>	-2	A
Collector Current	I <sub>C</sub>	-4.3	A
Peak Collector Current (t <sub>p</sub> ≤1ms)	I <sub>CM</sub>	-15	A
Collector Dissipation	P <sub>C</sub>	600	W
Junction Temperature	T <sub>J</sub>	+150	°C
Storage Temperature	T <sub>STG</sub>	-65 ~ +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. Single pulse, P<sub>w</sub>=10ms.

3. Device mounted on FR-4 PCB with minimum recommended pad layout. (25×25×1.6mm)

### ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ <sub>JA</sub>	83	°C/W
Junction to Case	θ <sub>JC</sub>	60	°C/W

### ■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>= 25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	I <sub>C</sub> =-100μA	-100			V
Collector-Emitter Breakdown Voltage	BV <sub>CER</sub>	I <sub>C</sub> =-1μA, R <sub>B</sub> ≤1kΩ	-100			V
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	I <sub>C</sub> =-10mA	-60			V
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	I <sub>E</sub> =-100μA	-7.0			V
Collector-Base Cut-off Current	I <sub>CBO</sub>	V <sub>CB</sub> =-80V, I <sub>E</sub> =0A			-20	nA
		V <sub>CB</sub> =-80V, I <sub>E</sub> =0A, T <sub>A</sub> =100°C			-500	nA
Collector-Emitter Cut-off Current	I <sub>CES</sub>	V <sub>CE</sub> =-80V, V <sub>BE</sub> =0V			-20	nA
Emitter-Base Cut-off Current	I <sub>EBO</sub>	V <sub>EB</sub> =-6V, I <sub>C</sub> =0A			-10	nA
Base-Emitter On Voltage (Note)	V <sub>BE(ON)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-5A			-950	V
Base-Emitter Saturation Voltage (Note)	V <sub>BE(SAT)</sub>	I <sub>C</sub> =-5A, I <sub>B</sub> =-500mA			-1050	mV
Collector-Emitter Saturation Voltage (Note)	V <sub>CE(SAT)</sub>	I <sub>C</sub> =-100mA, I <sub>B</sub> =-10mA			-20	mV
		I <sub>C</sub> =-1A, I <sub>B</sub> =-100mA			-65	mV
		I <sub>C</sub> =-2A, I <sub>B</sub> =-200mA			-110	mV
		I <sub>C</sub> =-5A, I <sub>B</sub> =-500mA			-215	mV
DC Current Transfer Ratio (Note)	h <sub>FE</sub>	I <sub>C</sub> =-10mA, V <sub>CE</sub> =-1V	100			
		I <sub>C</sub> =-2A, V <sub>CE</sub> =-1V	100		300	
		I <sub>C</sub> =-5A, V <sub>CE</sub> =-1V	45			
		I <sub>C</sub> =-10A, V <sub>CE</sub> =-1V	10			
Turn-ON Delay Time (Note 1)	t <sub>D(ON)</sub>	I <sub>C</sub> =-1A, V <sub>CC</sub> =-10V, f=50MHz		39		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			370		ns
Transition Frequency (Note)	f <sub>T</sub>	I <sub>C</sub> =-100mA, V <sub>CE</sub> =-10V, f=50MHz		120		MHz
Collector Capacitance	C <sub>OB</sub>	V <sub>CB</sub> =-10V, f=1MHz		48		pF

Note : Measured under pulsed conditions. Pulse Test: Pulse width ≤ 300μs, Duty cycle≤2%.

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