



## USS4480X

Preliminary

**NPN SILICON TRANSISTOR**

### 4.0A, 80V NPN LOW $V_{CE(SAT)}$ TRANSISTOR

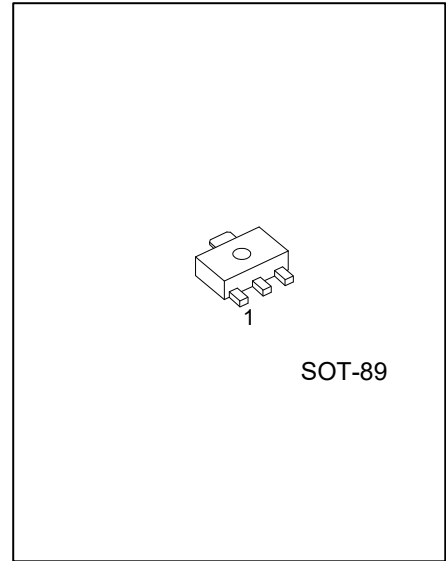
#### DESCRIPTION

The UTC **USS4480X** is NPN low  $V_{CE(SAT)}$  transistor in a medium power and flat lead SOT-89 Surface-Mounted Device (SMD) plastic package.

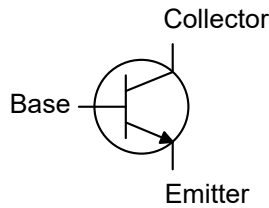
PNP complement: USS5480X.

#### 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



#### EQUIVALENT CIRCUIT



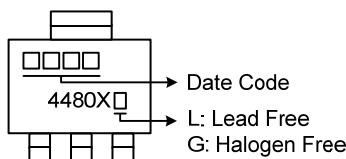
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
USS4480XL-AB3-R	USS4480XG-AB3-R	SOT-89	B	C	E	Tape Reel

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

USS4480XG-AB3-R	(1) Packing Type	(1) R: Tape Reel
	(2) Package Type	(2) AB3: SOT-89
	(3) Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

#### MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	$V_{CBO}$	80	V
Collector-Emitter Voltage	$V_{CEO}$	80	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	4	A
Collector Current	$I_{CM}$	10	A
Power Dissipation	$P_C$	550	mW
Junction Temperature	$T_J$	+150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^{\circ}\text{C}$

Note: 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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	225	$^{\circ}\text{C}/\text{W}$

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C=100\mu\text{A}, I_E=0$	80			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=1\text{mA}, I_B=0$	80			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E=100\mu\text{A}, I_C=0$	5			V
Collector-Base Cut-off Current	$I_{CBO}$	$V_{CB}=80\text{V}, I_E=0$			100	nA
Emitter-Base Cut-off Current	$I_{EBO}$	$V_{EB}=5\text{V}, I_C=0$			100	nA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=0.5\text{A}, I_B=50\text{mA}$			0.85	V
		$I_C=1\text{A}, I_B=50\text{mA}$			0.9	V
		$I_C=1\text{A}, I_B=100\text{mA}$			0.95	V
		$I_C=4\text{A}, I_B=400\text{mA}$			1.05	V
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	$V_{CE}=2\text{V}, I_C=2\text{A}$			0.85	V
DC Current Gain	$h_{FE}$	$V_{CE}=2\text{V}, I_C=0.5\text{A}$	250			
		$V_{CE}=2\text{V}, I_C=1\text{A}$	250			
		$V_{CE}=2\text{V}, I_C=2\text{A}$	175			
		$V_{CE}=2\text{V}, I_C=4\text{A}$	80			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=0.5\text{A}, I_B=50\text{mA}$			40	mV
		$I_C=1\text{A}, I_B=50\text{mA}$			80	mV
		$I_C=2\text{A}, I_B=40\text{mA}$			160	mV
		$I_C=4\text{A}, I_B=200\text{mA}$			230	mV
		$I_C=5\text{A}, I_B=500\text{mA}$			270	mV

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