



**USSN5460**

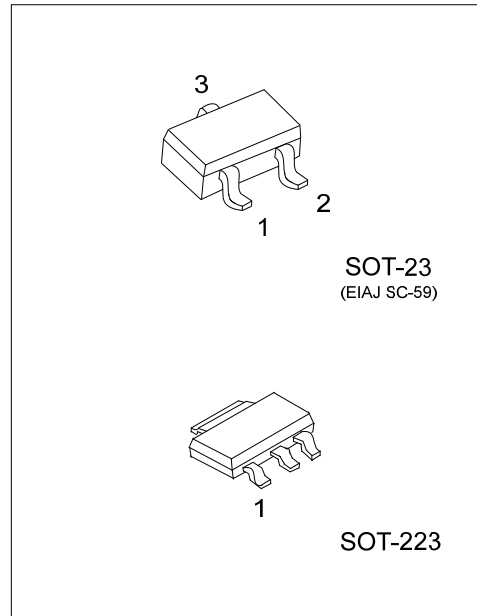
Preliminary

**NPN EPITAXIAL SILICON TRANSISTOR**

**60V, 4.0A NPN LOW  $V_{CE(SAT)}$  TRANSISTOR**

■ **FEATURES**

- \* Low collector-emitter saturation voltage  $V_{CE(SAT)}$
- \* High collector current capability:  $I_C$  and  $I_{CM}$
- \* Higher efficiency leading to less heat generation
- \* Reduced printed-circuit board requirements
- \* Complement: USSP5460



■ **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
USSN5460L-AA3-R	USSN5460G-AA3-R	SOT-223	B	C	E	Tape Reel
USSN5460L-AE3-R	USSN5460G-AE3-R	SOT-23	B	E	C	Tape Reel

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

<p>USSN5460G-AA3-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel (2) AA3: SOT-223, AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ **MARKING**

SOT-223	SOT-23
<p>L: Lead Free G: Halogen Free Date Code</p>	

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

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		$V_{CB0}$	150	V
Collector-Emitter Voltage		$V_{CE0}$	60	V
Emitter-Base Voltage		$V_{EB0}$	6	V
Collector Current	DC	$I_C$	4	A
	Peak	$I_{CM}$	10	A
Base Current (DC)		$I_B$	1	A
Power Dissipation ( $T_A \leq 25^\circ\text{C}$ )	SOT-223	$P_D$	1.35	W
	SOT-23		0.35	W
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-65 ~ +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. Device mounted on a FR4 printed-circuit board, single-sided copper; tin-plated, mounting pad for collector 1  $\text{cm}^2$ .

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-223	$\theta_{JA}$	92	$^\circ\text{C/W}$
	SOT-23		357	$^\circ\text{C/W}$
Junction to Case	SOT-223	$\theta_{JC}$	20	$^\circ\text{C/W}$
	SOT-23		100	$^\circ\text{C/W}$

Note: Device mounted on a FR4 printed-circuit board, single-sided copper; tin-plated, mounting pad for collector 1  $\text{cm}^2$ .

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector to Base Breakdown Voltage	$BV_{CB0}$	$I_C=100\mu\text{A}$ , $I_E=0$	150			V
Collector to Emitter Breakdown Voltage	$BV_{CE0}$	$I_C=1\text{mA}$ , $I_B=0$	60			V
Emitter to Base Breakdown Voltage	$BV_{EB0}$	$I_E=100\mu\text{A}$ , $I_C=0$	6			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=60\text{V}$ , $I_E=0$			100	nA
		$V_{CB}=60\text{V}$ , $I_E=0$ , $T_J=150^\circ\text{C}$			50	$\mu\text{A}$
Collector Cut-Off Current	$I_{CES}$	$V_{CE}=60\text{V}$ , $V_{BE}=0$			100	nA
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=5\text{V}$ , $I_C=0$			100	nA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=1\text{A}$ , $I_B=10\text{mA}$			260	mV
		$I_C=2\text{A}$ , $I_B=40\text{mA}$			250	mV
		$I_C=4\text{A}$ , $I_B=400\text{mA}$			230	mV
Base-Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	$I_C=4\text{A}$ , $I_B=400\text{mA}$			1.07	V
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	$V_{CE}=2\text{V}$ , $I_C=2\text{A}$			0.9	V
Dc Current Gain (Note)	$h_{FE}$	$V_{CE}=2\text{V}$ , $I_C=10\text{mA}$	300		900	
		$V_{CE}=2\text{V}$ , $I_C=1.0\text{A}$	240			
		$V_{CE}=2\text{V}$ , $I_C=4.0\text{A}$	100			

Note: Pulse test:  $t_p \leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$ .

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