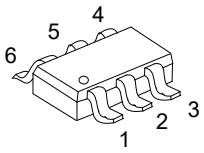
USS4160DPN

DUAL TRANSISTOR

COMPLEMENTARY NPN/PNP TRANSISTOR



SOT-26

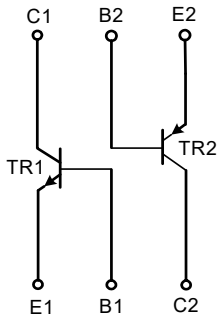
■ DESCRIPTION

The UTC **USS4160DPN** is an NPN and a PNP bipolar junction transistor (BJT). it uses UTC's advanced technology to provide the customers with low collector -emitter saturation voltage, etc.

■ FEATURES

* NPN/PNP silicon transistor
* Ideal for Low Power Amplification and Switching
* Low collector-emitter saturation voltage
* High DC current Gain
* Simplify circuit design
* Epitaxial Planar Die Construction

■ EQUIVALENT CIRCUIT



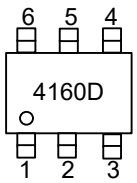
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
USS4160DPNL-AG6-R	USS4160DPNG-AG6-R	SOT-26	E1	B1	C2	E2	B2	C1	Tape Reel

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

USS4160DPNG-AG6-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AG6: SOT-26 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS		UNIT
		TR1 (NPN)	TR2 (PNP)	
Collector-Base Voltage	V_{CBO}	80	-80	V
Collector-Emitter Voltage	V_{CEO}	60	-60	V
Emitter-Base Voltage	V_{EBO}	5	-5	V
Collector Current	I_C	1	-1	A
Power Dissipation	P_C	290		mW
Junction Temperature	T_J	+150		°C
Storage Temperature	T_{STG}	-55 ~ +150		°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	θ_{JA}	431	°C/W

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

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

TR1 (NPN)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=100μA, I_E=0	80			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=1mA, I_B=0	60			V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=100μA, I_C=0	5			V
Collector-Base Cut-off Current	I_{CBO}	V_{CB}=60V, I_E=0			100	nA
Collector-Emitter Cut-off Current	I_{CES}	V_{CE}=60V, V_{BE}=0			100	nA
Emitter-Base Cut-off Current	I_{EBO}	V_{EB}=5V, I_C=0			100	nA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C=1A, I_B=50mA			1.1	V
Base-Emitter Turn-On Voltage	V_{BEON}	V_{CE}=5V, I_C=1A			0.9	V
DC Current Gain	h_{FE}	V_{CE}=5V, I_C=1mA	250			
		V_{CE}=5V, I_C=500mA	200			
		V_{CE}=5V, I_C=1A	100			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=100mA,I_B=1mA			110	mV
		I_C=500mA,I_B=50mA			140	mV
		I_C=1A,I_B=100mA			250	mV

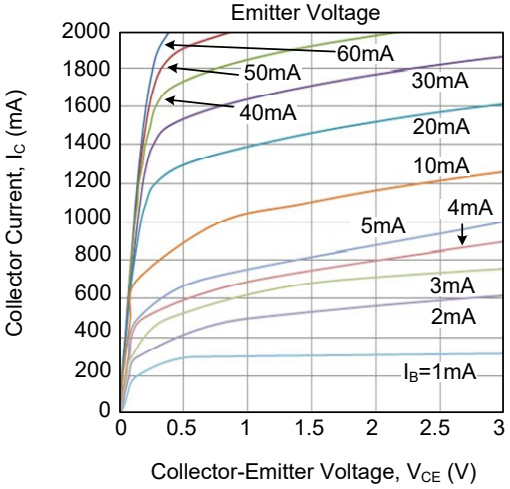
TR2 (PNP)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=-100μA, I_E=0	-80			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=-1mA, I_B=0	-60			V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=-100μA, I_C=0	-5			V
Collector-Base Cut-off Current	I_{CBO}	V_{CB}=-60V, I_E=0			-100	nA
Collector-Emitter Cut-off Current	I_{CES}	V_{CE}=-60V, V_{BE}=0			-100	nA
Emitter-Base Cut-off Current	I_{EBO}	V_{EB}=-5V, I_C=0			-100	nA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C=-1A, I_B=-50mA			-1.1	V
Base-Emitter Turn-On Voltage	V_{BEON}	V_{CE}=-5V, I_C=-1A			-0.9	V
DC Current Gain	h_{FE}	V_{CE}=-5V, I_C=-1mA	200			
		V_{CE}=-5V, I_C=-500mA	150			
		V_{CE}=-5V, I_C=-1A	100			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=-100mA,I_B=-1mA			-165	mV
		I_C=-500mA,I_B=-50mA			-175	mV
		I_C=-1A,I_B=-100mA			-330	mV

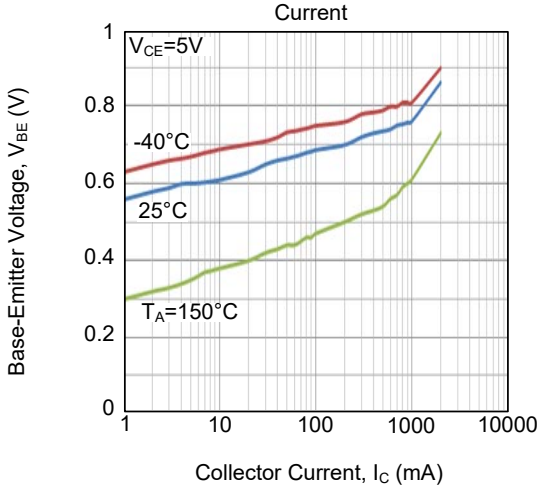
■ TYPICAL CHARACTERISTICS

TR1 (NPN)

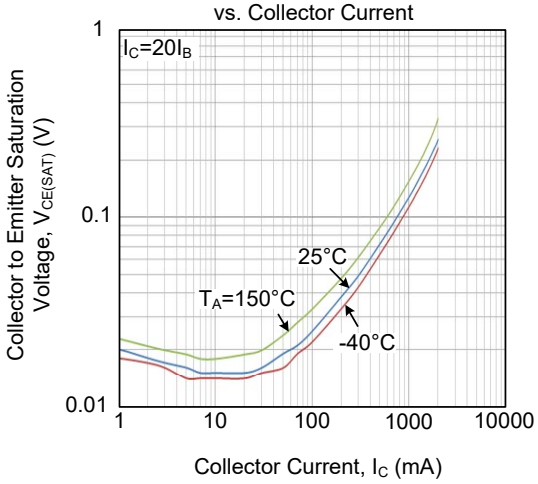
Collector Current vs. Collector-Emitter Voltage



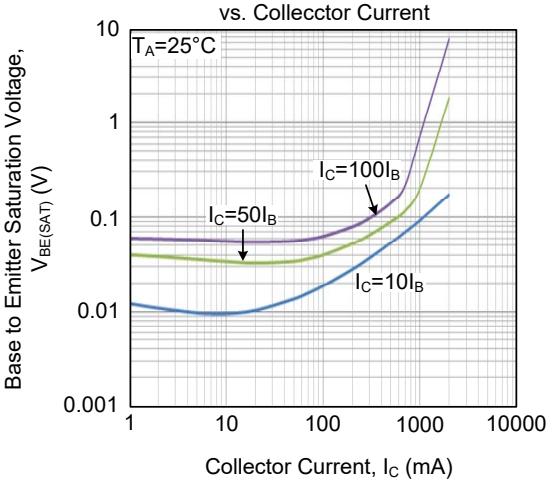
Base-Emitter Voltage vs. Collector Current



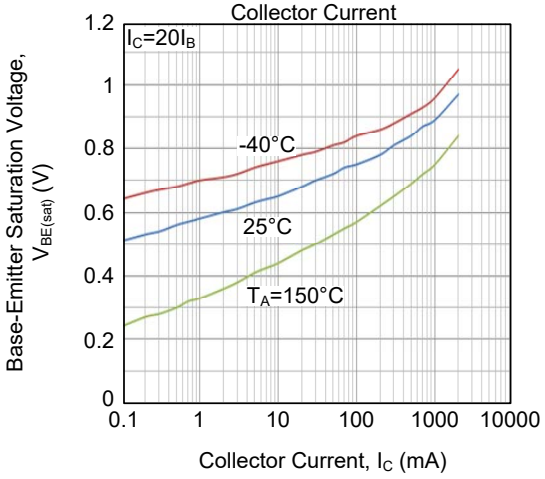
Collector-Emitter Saturation Voltage vs. Collector Current



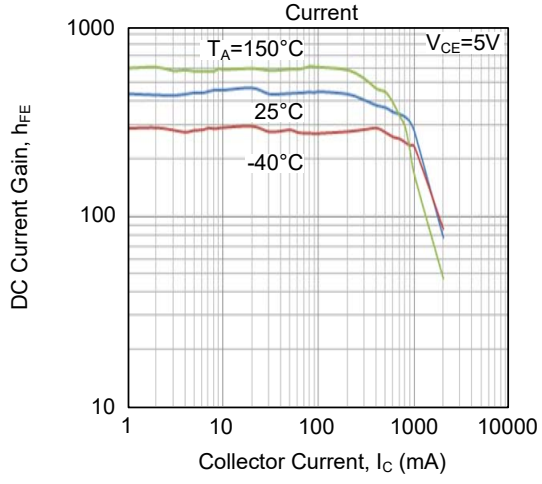
Collector-Emitter Saturation Voltage vs. Collecctor Current



Base-Emitter Saturation Voltage vs. Collector Current



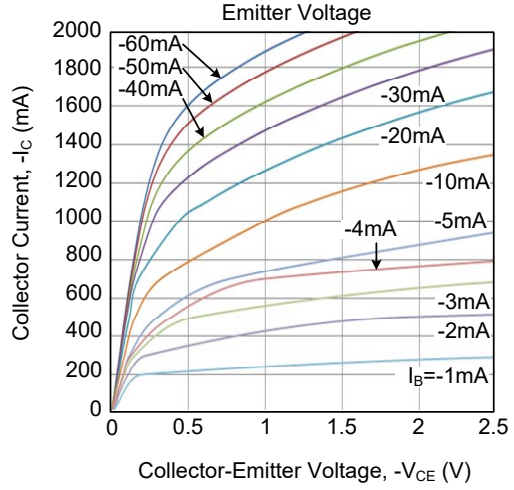
DC Current Gain vs. Collector Current



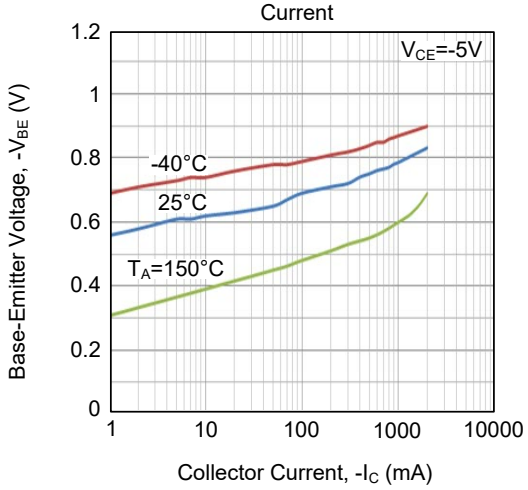
■ TYPICAL CHARACTERISTICS

TR2 (PNP)

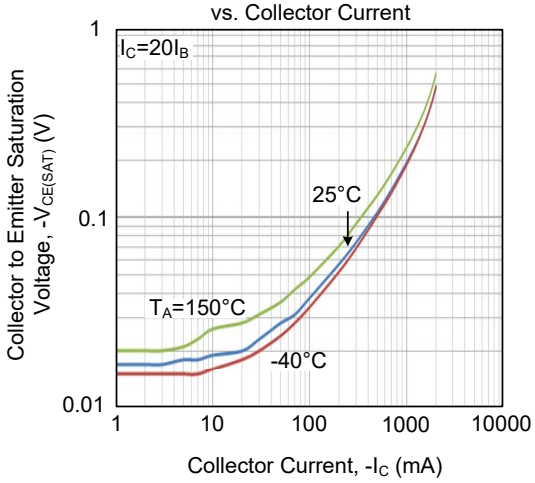
Collector Current vs. Collector-Emitter Voltage



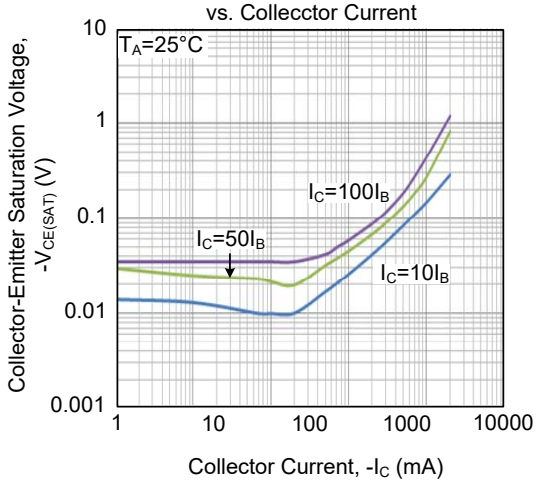
Base-Emitter Voltage vs. Collector Current



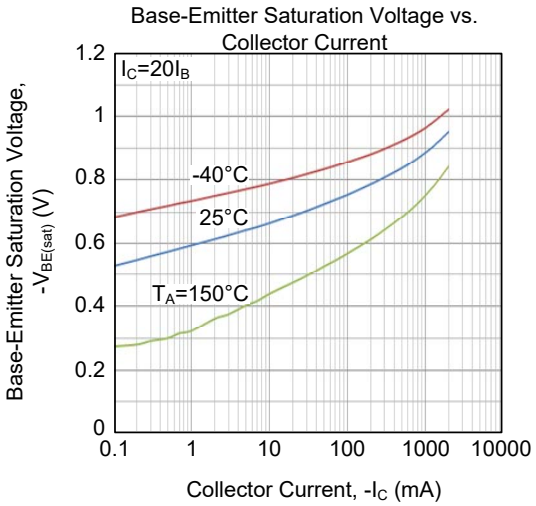
Collector-Emitter Saturation Voltage vs. Collector Current



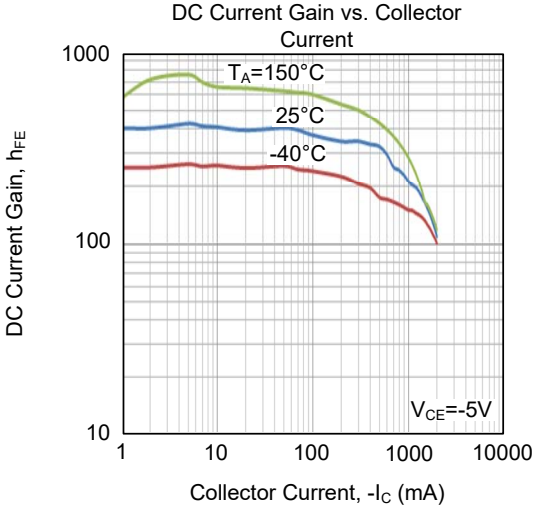
Collector-Emitter Saturation Voltage vs. Collecctor Current



Base-Emitter Saturation Voltage vs. Collector Current



DC Current Gain vs. Collector Current



■ TYPICAL CHARACTERISTICS (Cont.)