

CHARACTERISTICS (cont'd)

Base-to-Emitter Saturation Voltage ($I_c = 150 \text{ mA}$, $I_B = 15 \text{ mA}$)	$V_{BE}(\text{sat})$	1.3 max	V
Collector-Cutoff Current ($V_{CB} = 90 \text{ V}$, $I_E = 0$, $T_c = 150^\circ\text{C}$)	I_{CBO}	15 max	μA
Small-Signal Forward-Current Transfer Ratio: $V_{CE} = 5 \text{ V}$, $I_c = 1 \text{ mA}$, $f = 1 \text{ kc/s}$	h_{fe}	30 to 100	
$V_{CE} = 10 \text{ V}$, $I_c = 50 \text{ mA}$, $f = 20 \text{ Mc/s}$	h_{fe}	2.5 min	
Static Forward-Current Transfer Ratio ($V_{CE} = 10 \text{ V}$, $I_c = 0.1 \text{ mA}$)	h_{FE}	20 min	
Pulsed Static Forward-Current Transfer Ratio ($V_{CE} = 10 \text{ V}$, $I_c = 150 \text{ mA}$, $t_p = 300 \mu\text{s}$, $df = 1.8\%$)	h_{FE} (pulsed) ft	40 to 120 50 min	Mc/s
Gain-Bandwidth Product	C_{ib}	85 max	pF
Input Capacitance ($V_{EB} = 0.5 \text{ V}$, $I_c = 0$)	h_{ib}	20 to 30	Ω
Input Resistance ($V_{CB} = 5 \text{ V}$, $I_c = 1 \text{ mA}$, $f = 1 \text{ kc/s}$)	h_{rb}	1.25×10^{-4} max	
Voltage-Feedback Ratio: $V_{CB} = 5 \text{ V}$, $I_c = 1 \text{ mA}$, $f = 1 \text{ kc/s}$	h_{rb}	1.5×10^{-4} max	
$V_{CB} = 10 \text{ V}$, $I_c = 5 \text{ mA}$, $f = 1 \text{ kc/s}$	Θ_{J-C}	58.3 max	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	Θ_{J-A}	219 max	$^{\circ}\text{C}/\text{W}$

2N1905**POWER TRANSISTOR**

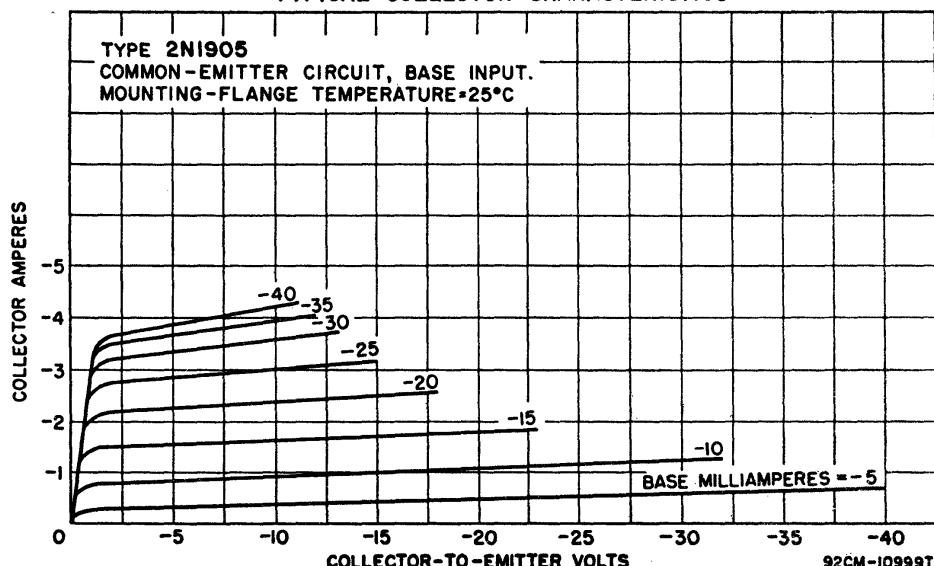
Ge p-n-p drift-field type intended for use in power-switching circuits, dc-to-dc converters, inverters, ultrasonic oscillators, and large-signal wide-band linear amplifiers. Similar to JEDEC TO-3, Outline No.2 (Variant 2). Terminals: 1 (B) - base, 2 (E) - emitter, Mounting Flange - collector and case.

MAXIMUM RATINGS

Collector-to-Base Voltage	V_{CBO}	-100	V
Collector-to-Emitter Voltage	V_{CEO}	-50	V
Emitter-to-Base Voltage	V_{EBO}	-1.5	V
Collector Current	I_c	-6	A
Emitter Current	I_E	6	A
Base Current	I_B	-1	A
Transistor Dissipation: TMF up to 55°C	P_T	30	W
TMF above 55°C	P_T	See curve page 112	
Temperature Range: Operating (Junction)	$T_J(\text{opr})$	-65 to 100	$^{\circ}\text{C}$
Storage	T_{STG}	-65 to 100	$^{\circ}\text{C}$
Pin-Soldering Temperature (10 s max)	T_P	255	$^{\circ}\text{C}$

CHARACTERISTICS (At mounting-flange temperature = 25°C)

Collector-to-Emitter Sustaining Voltage ($I_c = -100 \text{ mA}$, $I_B = 0$)	$V_{CEO}(\text{sus})$	-50 min	V
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TYPICAL COLLECTOR CHARACTERISTICS

CHARACTERISTICS (cont'd)

Collector-to-Emitter Saturation Voltage ($I_C = -5$ A, $I_B = 0.25$ A)	$V_{CE(sat)}$	-1 max	V
Base-to-Emitter Voltage ($V_{CE} = -2$ V, $I_C = -1$ A)	V_{BE}	-0.5 max	V
Collector-Cutoff Current: $V_{CB} = -100$ V, $V_{BE(f)} = 1$ V	I_{CBO}	-10 max	mA
$V_{CE} = -40$ V, $V_{BE} = -1$ V, $T_{MF} = 55^\circ\text{C}$	I_{CEV}	-3 max	mA
$V_{CE} = -40$ V, $I_B = 0$	I_{CEO}	-75 max	mA
Emitter-Cutoff Current ($V_{EB} = -1.5$ V, $I_C = 0$)	I_{EBO}	-2.5 max	mA
Static Forward-Current Transfer Ratio: $V_{CE} = -2$ V, $I_C = -5$ A	h_{FE}	30 min	
$V_{CE} = -2$ V, $I_C = -1$ A	h_{FE}	50 to 150	
Small-Signal Forward-Current Transfer Ratio: $V_{CE} = -5$ V, $I_C = -0.5$ A, $f = 1$ kc/s	h_{fe}	30 to 200	
$V_{CE} = -5$ V, $I_C = -0.5$ A, $f = 1$ Mc/s	h_{fe}	2 min	

POWER TRANSISTOR

2N1906

Ge p-n-p drift-field type used in power-switching circuits, dc-to-dc converters, inverters, ultrasonic oscillators, and large-signal wide-band linear amplifiers. Similar to JEDEC TO-3, Outline No.2 (variant 2). Terminals: 1 (B) - base, 2 (E) - emitter, Mounting Flange - collector and case. This type is identical with type 2N1905 except for the following items:

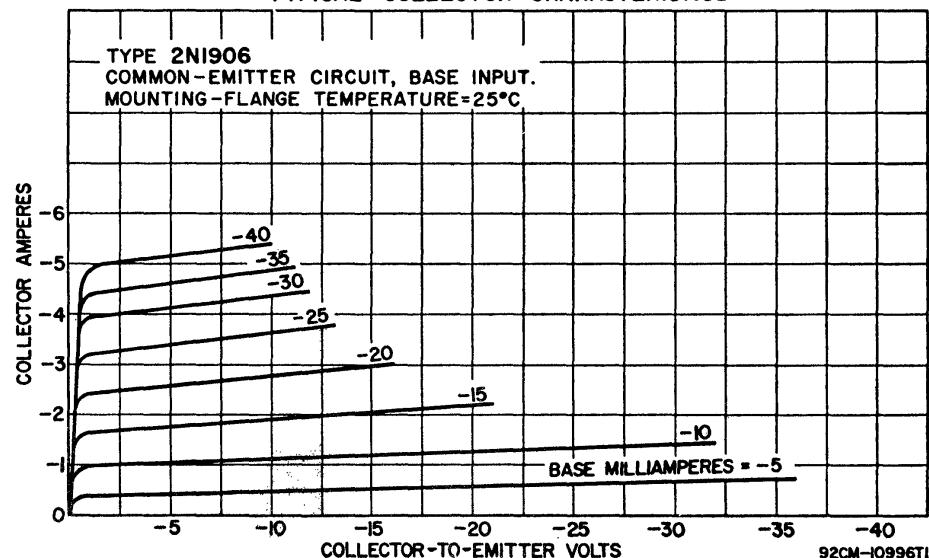
MAXIMUM RATINGS

Collector-to-Base Voltage	V_{CBO}	-130	V
Collector-to-Emitter Voltage	V_{CEO}	-60	V

CHARACTERISTICS (At mounting-flange temperature = 25°C)

Collector-to-Emitter Sustaining Voltage ($I_C = -100$ mA, $I_B = 0$)	$V_{CEO(sus)}$	-60 min	V
Collector-to-Emitter Saturation Voltage ($I_C = -5$ A, $I_B = -0.25$ A)	$V_{CE(sat)}$	-0.5 max	V
Collector-Cutoff Current ($V_{CB} = -130$ V, $V_{BE(f)} = 1$ V)	I_{CBO}	-10 max	mA
Static Forward-Current Transfer Ratio: $V_{CE} = -2$ V, $I_C = -5$ A	h_{FE}	75 max	
$V_{CE} = -2$ V, $I_C = -1$ A	h_{FE}	75 to 250	
Small-Signal Forward-Current Transfer Ratio: $V_{CE} = -5$ V, $I_C = -0.5$ A, $f = 1$ kc/s	h_{fe}	50 to 300	
$V_{CE} = -5$ V, $I_C = -0.5$ A, $f = 1$ Mc/s	h_{fe}	3 min	

TYPICAL COLLECTOR CHARACTERISTICS

TYPICAL OPERATION IN POWER-SWITCHING CIRCUIT
(At mounting-flange temperature = 25°C)

DC Collector-Supply Voltage	V_{CC}	5	12.5	12.5	V
On DC Collector Current	I_C	-1	-2.5	-5	A
Turn-On DC Base Current	I_{B1}	-	-0.25	-0.25	A