

**GSTU8030
GSTU8035
GSTU8040**

**NPN
300, 350, 400V
8 AMP SWITCHING
 t_f — 280ns TYPICAL**

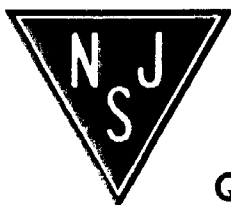
TO-204AA (TO-3)

- High Speed
- Off-line Power Supplies
- Motor Speed Control Circuits
- Rugged
- Switching Amplifiers
- Switching Regulators
- Cost Effective
- Inverters/Converters
- Solenoid & Relay Drivers

MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise noted)					
RATING	SYMBOL	GSTU8030	GSTU8035	GSTU8040	UNIT
Collector-Base Voltage	V_{CB0}	400	450	500	Volts
Collector-Emitter Voltage	V_{CE0}	300	350	400	Volts
Emitter-Base Voltage	V_{EB0}	8.0	8.0	8.0	Volts
Collector Current—Continuous	I_C	12	12	12	Amps
Peak	I_{CM}	16	16	16	Amps
Base Current—Continuous	I_B	4.0	4.0	4.0	Amps
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_D	175	175	175	Watts
θ_{j-c} , Junction to Case Thermal Resistance	$R_{\theta,jc}$	1.0	1.0	1.0	$^\circ\text{C/W}$
Operating and Storage Junction Temperature Range	$T_{j(oper)}$ T_{sto}	-65 to +200	-65 to +200	-65 to +200	$^\circ\text{C}$

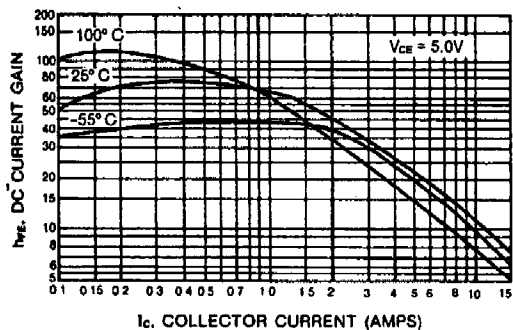
ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)								
SYMBOL	CONDITIONS	GSTU8030		GSTU8035		GSTU8040		Unit
		Min	Max	Min	Max	Min	Max	
V_{CB0}	$I_C = 1.0\text{mA}$	400	—	450	—	500	—	Volts
V_{CE0}	$I_C = 50\text{mA}$	300	—	350	—	400	—	Volts
V_{EB0}	$I_E = 1.0\text{mA}$	8.0	—	8.0	—	8.0	—	Volts
I_{CB0}	$V_{CB} = 80\%$ of Rated V_{CB0}	—	100	—	100	—	100	μA
I_{EB0}	$V_{EB} = 5.0\text{V}$	—	10	—	10	—	10	μA
$h_{FE}f$	$V_{CE} = 6.0\text{V}$, $I_C = 8.0\text{A}$	10	—	10	—	10	—	—
$V_{CE(sat)}^\dagger$	$I_C = 8.0\text{A}$, $I_B = 1.6\text{A}$	—	1.0	—	1.0	—	1.0	Volts
$V_{BE(sat)}^\dagger$	$I_C = 8.0\text{A}$, $I_B = 1.6\text{A}$	—	1.5	—	1.5	—	1.5	Volts
f_T	$V_{CE} = 10\text{V}$, $I_C = 1.0\text{A}$, $f = 10\text{MHz}$	25	—	25	—	25	—	MHz
C_{ob0}	$V_{CB} = 10\text{V}$, $f = 1\text{MHz}$	—	300	—	300	—	300	pF
SWITCHING		Typ	Max	Typ	Max	Typ	Max	Unit
t_d	Resistive Load $V_{CC} = 250\text{V}$ $I_C = 8.0\text{A}$, $R = 31\Omega$ $I_{B1} = I_{B2} = 1.6\text{A}$ $t_p = 50\mu\text{sec}$	0.04	0.05	0.04	0.05	0.04	0.05	μs
t_r		0.15	0.25	0.15	0.25	0.15	0.25	μs
t_s		1.60	2.50	1.60	2.50	1.60	2.50	μs
t_f		0.28	0.40	0.28	0.40	0.28	0.40	μs
t_{sv}	Inductive Load $V_{CLAMP} = 250\text{V}$ $I_C = 10\text{A}$, $L = 100\mu\text{H}$ $I_{B1} = I_{B2} = 2.0\text{A}$ $t_p = 50\mu\text{sec}$	1.80	2.50	1.80	2.50	1.80	2.50	μs
t_{rv}		0.27	0.40	0.27	0.40	0.27	0.40	μs
t_n		0.13	0.25	0.13	0.25	0.13	0.25	μs
t_c		0.35	0.50	0.35	0.50	0.35	0.50	μs
$t_s 100^\circ\text{C}$		2.70	4.00	2.70	4.00	2.70	4.00	μs
$t_{rv} 100^\circ\text{C}$		0.40	0.60	0.40	0.60	0.40	0.60	μs
$t_n 100^\circ\text{C}$		0.15	0.30	0.15	0.30	0.15	0.30	μs
$t_c 100^\circ\text{C}$		0.60	1.00	0.60	1.00	0.60	1.00	μs

† Pulse Conditions: Width = 300 μs ; Duty Cycle $\leq 2\%$ (measured using Kelvin connections).

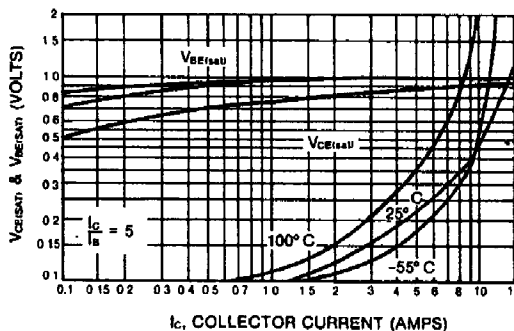


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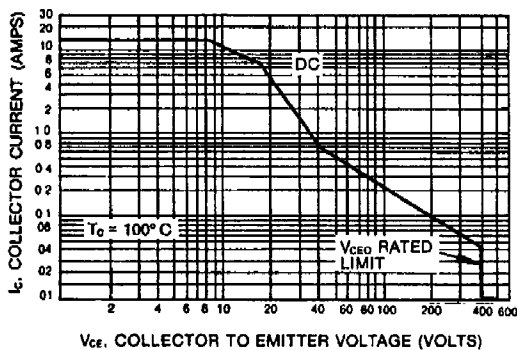
TYPICAL DC CURRENT GAIN



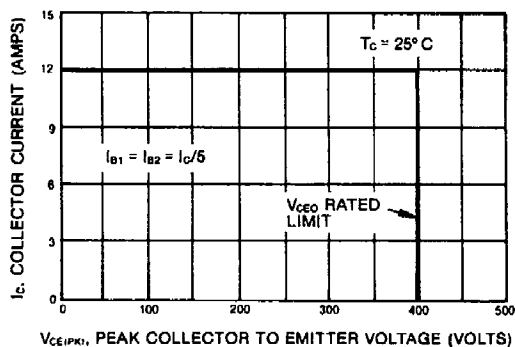
TYPICAL SATURATION VOLTAGE



FORWARD BIASED SAFE OPERATING AREA



TURN-OFF SAFE OPERATING AREA



PACKAGE OUTLINE

