HIGH SPEED
NPN POWER TRANSISTORS

GE13100P
GE13101P

400 & 450 VOLTS
20 AMPS, 125 WATTS

The GE13100P and GE13101P transistors are designed for high-voltage, high-speed power switching in inductive circuits where fall time is critical. They are particularly suited for line-operated switch-mode applications such as:

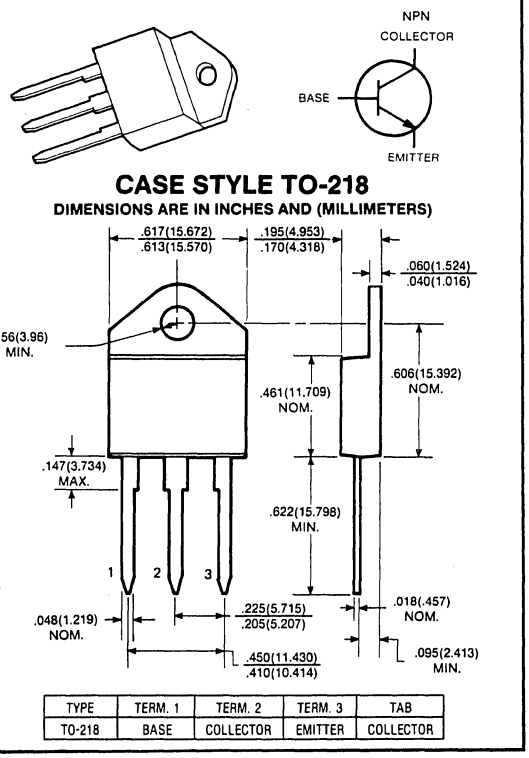
Features:

- Switching regulators
- Inverters
- Solenoid and relay drivers
- Motor controls
- Deflection circuits

Fast Turn-Off Times:
30 ns inductive fall time @ 25°C (Typ)
50 ns inductive crossover time @ 25°C (Typ)
900 ns inductive storage time @ 25°C (Typ)

Operating temperature range -65 to +150°C

100°C Performance Specified for:
Switching times with inductive loads —
50 ns inductive fall time (Typ)
Saturation voltages
Leakage currents



TYPE	TERM. 1	TERM. 2	TERM. 3	TAB
TO-218	BASE	COLLECTOR	EMITTER	COLLECTOR

maximum ratings (T_A = 25°C) (unless otherwise specified)

RATING	SYMBOL	GE13100P	GE13101P	UNITS
Collector-Emitter Voltage	V_{CEO}	400	450	Volts
Collector-Emitter Voltage	V_{CEV}	650	750	Volts
Emitter Base Voltage	V_{EBO}	6	6	Volts
Collector Current — Continuous Peak (Repetitive)(1)	I_C I_{CM}	20 30	20 30	A
Base Current — Continuous Peak (Non-Repetitive)(1)	I_B I_{BM}	10 15	10 15	A
Total Power Dissipation @ Tc = 25°C @ Tc = 100°C Derate above 25°C	P_D	125 50 1.0	125 50 1.0	Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	-65 to +150	°C

thermal characteristics

Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.0	1.0	°C/W
Maximum Lead Temperature for Soldering Purpose: ⅛" from Case for 5 Seconds	T_L	275	275	°C

(1) Pulse Test: Pulse Width = 5ms. Duty Cycle ≤ 10%.

electrical characteristics (T_C = 25° C) (unless otherwise specified)

CHARACTERISTIC		SYMBOL	MIN	TYP	MAX	UNIT
off characteristics[1]						
Collector-Emitter Sustaining Voltage (I_C = 100mA, I_B = 0)	GE13100P GE13101P	$V_{CEO(sus)}$	400 450	— —	— —	Volts
Collector Cutoff Current (V_{CEV} = Rated Value, $V_{BE(off)}$ = 1.5V) (V_{CEV} = Rated Value, $V_{BE(off)}$ = 1.5V, T_C = 100° C)		I_{CEV}	— —	— —	0.5 2.5	mA
Collector Cutoff Current (V_{CE} = Rated V_{CEV}, R_{BE} = 50Ω, T_C = 100° C)		I_{CER}	—	—	3	mA
Emitter Cutoff Current (V_{EB} = 6V, I_C = 0)		I_{EBO}	—	—	1.0	mA
on characteristics						
DC Current Gain (I_C = 15A, V_{CE} = 3V)		h_{FE}	8	—	40	—
Collector-Emitter Saturation Voltage (I_C = 15A, I_B = 3A) (I_C = 20A, I_B = 4A) (I_C = 15A, I_B = 3A, T_C = 100° C)		$V_{CE(sat)}$	— — —	— — —	1 3 2	V
Base-Emitter Saturation Voltage (I_C = 15A, I_B = 3A) (I_C = 15A, I_B = 3A, T_C = 100° C)		$V_{BE(sat)}$	— —	— —	1.5 1.5	V
switching characteristics						
Resistive Load						
Delay Time	(V_{CC} = 250V, I_C = 15A	t_d	—	0.02	0.05	μs
Rise Time	I_{B1} = 2A, t_p = 30 μs	t_r	—	0.13	0.50	
Storage Time	Duty Cycle < 2%, $V_{BE(OFF)}$ = 5V)	t_s	—	0.90	3.5	
Fall Time		t_f	—	0.10	0.5	
Inductive Load, Clamped						
Storage Time	$I_{C(pk)}$ = 15A	(T_J = 100° C) t_{sv}	—	1.25	4	μs
Crossover Time	I_{B1} = 2A	t_c	—	0.15	.5	
Fall Time	$V_{BE(off)}$ = 5V	t_{fi}	—	0.13	.4	
Storage Time	$V_{CE(PK)}$ = 250V	(T_J = 25° C) t_{sv}	—	0.9	—	
Crossover Time		t_c	—	0.05	—	
Fall Time		t_{fi}	—	0.03	—	

(1) Pulse Test: Pulse Width - 300μs Duty Cycle ≤ 2%.