



**General
Semiconductor
Industries, Inc.**

**10 Amp NPN
300, 350, 400V
XGSR10030, 35, 40
XGSR10030-I, 35-I, 40-I**

C²R[®] HIGH SPEED/HIGH POWER SWITCHING TRANSISTORS

The XGSR series is an NPN double diffused epitaxial transistor designed for high speed switching systems. This unique series utilizes General Semiconductor Industries' C²R technology that provides surface stabilization for high voltage operation and enhances long term reliability. Another design feature is the use of an interdigitated emitter providing a periphery greater than 7.0 inches (18 cm) which improves both the gain characteristics and current handling capability.

These transistors have been specifically designed and engineered for high speed/high voltage switching applications where the designer is concerned with optimizing power conversion efficiency.

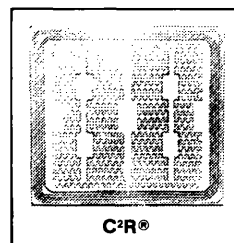
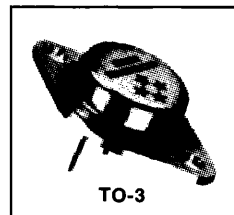
The XGSR series is also available in Isolated collector versions for reduction of conducted and radiated EMI.

FEATURES:

- High Voltage
- High Gain
- High Current
- Low Saturation Voltages
- Fast Switching
- Low Leakage Current
- Available in TO-3 and TO-3 Isolated Packages

APPLICATIONS:

- High Speed Switching
- Power Conversion
- Converters
- Inverters
- Class D Amplifiers
- Class C Amplifiers



MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

RATING	SYMBOL	XGSR10030 XGSR10030-I	XGSR10035 XGSR10035-I	XGSR10040 XGSR10040-I	UNIT
Collector-Base Voltage	V _{CBO}	350	400	450	Volts
Collector-Emitter Voltage	V _{CEO}	300	350	400	Volts
Emitter-Base Voltage	V _{EBO}	7.0	7.0	7.0	Volts
Collector Current—Continuous	I _C	15	15	15	Amps
—Peak	I _{CM}	20	20	20	Amps
Base Current—Continuous	I _B	5.0	5.0	5.0	Amps
Emitter Current—Continuous	I _E	20	20	20	Amps
—Peak	I _{EM}	30	30	30	Amps
Total Power Dissipation at T _C = 100°C	P _D	100	100	100	Watts
Junction to Case Thermal Resistance	R _{θJC}	0.75	0.75	0.75	°C/W
Operating and Storage Junction Temperature Range	T _{J(oper)} T _{stg}	-65 to +175 -65 to +200	-65 to +175 -65 to +200	-65 to +175 -65 to +200	°C °C

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ELECTRICAL CHARACTERISTICS (TC = 25°C unless otherwise noted)

SYMBOL	CONDITIONS	XGSR10030 XGSR10030-I		XGSR10035 XGSR10035-I		XGSR10040 XGSR10040-I		UNIT
		Min	Max	Min	Max	Min	Max	
V _{CB0}	I _C = 1.0mA	350	—	400	—	450	—	Volts
V _{CE0}	I _C = 50mA	300	—	350	—	400	—	Volts
V _{EBO}	I _E = 1.0mA	7.0	—	7.0	—	7.0	—	Volts
V _{CEX(SUS)}	I _C = 50mA, V _{BE} = 1.5V	350	—	400	—	450	—	Volts
V _{CEI(SUS)}	I _C = 50mA, R = 47Ω	325	—	375	—	425	—	Volts
I _{CB0}	V _{CB} = 80% V _{CB} Rated	—	500	—	500	—	500	μA
I _{EBO}	V _{EB} = 5.0V	—	100	—	100	—	100	μA
I _{CE0}	V _{CE} = 80% V _{CE} Rated	—	1.0	—	1.0	—	1.0	mA
I _{CEx}	V _{CE} = V _{CE0} Rated, V _{BE} = -1.5V, T _J = 150°C	—	3.0	—	3.0	—	3.0	mA
h _{FE}	V _{CE} = 5.0V, I _C = 10A †	10	—	10	—	10	—	
V _{CE(sat)}	I _C = 10A, I _B = 2.0A †	—	0.8	—	0.8	—	0.8	Volts
V _{BE(sat)}	I _C = 10A, I _B = 2.0A †	—	1.3	—	1.3	—	1.3	Volts
f _r	V _{CE} = 10V, I _C = 1.0A, 10MHz	25	75	25	75	25	75	MHz
C _{obo}	V _{CB} = 10V, f = 1MHz	100	350	100	350	100	350	pF
t _d	V _{CC} = 200V, I _C = 10A, I _{B1} = I _{B2} = 2.0A, t _p = 10μs, Duty Cycle < 2%, Resistive	—	0.05	—	0.05	—	0.05	μsec
t _r		—	0.2	—	0.2	—	0.2	μsec
t _s		—	1.5	—	1.5	—	1.5	μsec
t _f		—	0.5	—	0.5	—	0.5	μsec

† Pulse measurement conditions: Length = 300μsec, Duty Cycle < 2% (measured using separate current carrying and voltage sensing leads).

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NPN SWITCHING TRANSISTORS

