

PHASE CONTROL SCR's MEDIUM CURRENT 25 TO 35 AMPERES

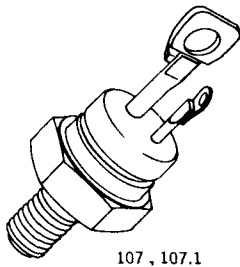
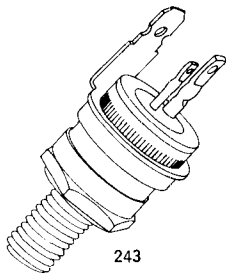
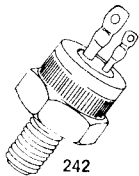
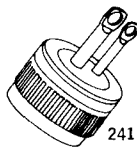
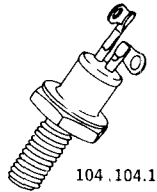
GE TYPE	—	C35	C38	C137	—
JEDEC	2N681-92	—	—	—	2N5204-07

ELECTRICAL SPECIFICATIONS

VOLTAGE RANGE	25-800	25-800	25-800	500-1200	600-1200
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FORWARD CONDUCTION

$I_{T(RMS)}$	Max. RMS on-state current (A)	25.0	35.0	35.0	35	35
$I_{T(AV)}$	Max. average on-state current @ 180° conduction (A) @ $T_C(^{\circ}C)$	16.0 @ 65°C	22.3 @ 35°C	22.5 @ 70°C	22.3 @ 40°C	22.3 @ 40°C
I_{TSM}	Max. peak one cycle, non-repetitive surge current (A)	150	225	225	360	300
I^2t	Max. I^2t for fusing for 5 to 8.3 msec (A^2 sec)	100	100	100	460	320
V_{FM}	Peak on-state Voltage @ 125°C, 180° conduction, rated $I_{T(AV)}$ (V)	2.0	2.0	2.0	2.3	2.3
θ_{J-C}	Max. internal thermal resistance, dc, junction-to-case ($^{\circ}C/W$)	1.7	1.7	1.5	1.6	1.5
I_H	Max. holding current @ 25°C (mA)	100	100	80	100	100
$t_d + t_r$	Typical turn-on time (μ sec)	1.6	1.6	1.6	1.6	1.6
t_q	Turn-off time (μ sec) (MAX)	75	75	25 Typ.	75	—
di/dt	Typical rate-of-rise turned-on current (A/μ sec)	80	80	80	150	150
T_J	Junction operating temperature range ($^{\circ}C$)	-65 to 125	-65 to 125	-65 to 150	-65 to 125	-40 to 125



BLOCKING

dv/dt	Min. critical rate-of-rise of off-stage voltage, exponential @ max. rated T_J (V/μ sec)	20	20 Typ.	20	100	100
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FIRING

I_{GT}	Max. required gate current to trigger (mA) @ -65°C	80	80	80	120	—
	@ -40°C	—	—	—	80	80
	@ 25°C	40	40	40	40	40
	@ 100°C	—	—	—	—	—
	@ 125°C	10	10	—	15	15
	@ 150°C	—	—	20	—	—
V_{GT}	Max. required gate voltage to trigger (V) @ -65°C	3.0	3.0	3.0	3.0	—
	@ -40°C	—	—	—	3.0	3.0
	@ 25°C	3.0	3.0	3.0	3.0	3.0
V_{GT}	Min. required gate voltage to trigger (V) @ 125°C	0.25	0.25	—	0.25	0.25
	@ 150°C	—	—	0.15	—	—

VOLTAGE TYPES

Repetitive Peak Forward and Reverse Voltages					
25	2N681	C35U	C38U	—	—
50	2N682 *	C35F	C38F	—	—
100	2N683 *	C35A	C38A	—	—
150	2N684	C35G	C38G	—	—
200	2N685 *	C35B	C38B	—	—
250	2N686 *	C35H	C38H	—	—
300	2N687 *	C35C	C38C	—	—
400	2N688 *	C35D	C38D	—	—
500	2N689 *	C35E	C38E	C137E	—
600	2N690	C35M	C38M	C137M	2N5204
700	2N691	C35S	C38S	C137S	—
800	2N692	C35N	C38N	C137N	2N5205
900	—	—	—	C137T	—
1000	—	—	—	C137P	2N5206
1100	—	—	—	C137PA	—
1200	—	—	—	C137PB	2N5207
PACKAGE OUTLINE NO.	107.1	107.1	107	107.1	107.1
SPECIFICATION SHEET NO.	160.22	160.20	160.30	160.45	160.46

* JAN & JANTX types available

See Trigger Selector Guide page 33.

HIGH RELIABILITY SPECIFICATIONS (Continued)

High Rel. Type	Commercial Type	Conservative Design Maximum Conditions				Estimated Maximum Failure Rate in Conservatively Designed Equipment %/1000 hrs.
		I_D	T_{SIG}, T_{JOP}	V_{ORM}, V_{RRM}	V_{RSM}	
C5AR1200	2N2324	1.6A	-65 to +85°C	50V	100V	.001
C5BR1200	2N2326	1.6A	-65 to +85°C	100V	200V	.001
C5DR1200	2N2329	1.6A	-65 to +85°C	200V	400V	.001
C10AR1200	2N1772A	4.7A	-65 to +100°C	50V	100V	.001
C10BR1200	2N1774A	4.7A	-65 to +100°C	100V	200V	.001
C10DR1200	2N1777A	4.7A	-65 to +100°C	200V	400V	.001
C11AR1200	2N1772	4.7A	-65 to +85°C	50V	100V	.001
C11BR1200	2N1774	4.7A	-65 to +85°C	100V	200V	.001
C11DR1200	2N1777	4.7A	-65 to +85°C	200V	400V	.001
C11MR1200	2N2619	4.7A	-65 to +85°C	300V	600V	.001
C35AR1200	2N683	16A	-65 to +85°C	50V	100V	.001
C35BR1200	2N685	16A	-65 to +85°C	100V	200V	.001
C35DR1200	2N688	16A	-65 to +85°C	200V	400V	.001
C35ER1200	2N689	16A	-65 to +85°C	250V	500V	.001
C35MR1200	2N690	16A	-65 to +85°C	300V	600V	.001
C38BR1200	2N685	16A	-65 to +100°C	100V	200V	.001
C38HR1200	2N686	16A	-65 to +100°C	125V	250V	.001
C38DR1200	2N688	16A	-65 to +100°C	200V	400V	.001
C137MR1200	2N5204	22.3A	-65 to +85°C	300V	600V	.001

SILICON ZENER DIODES

Type	V_Z AVALANCHE VOLTAGE ¹ @ $I_{ZT}, 25^\circ\text{C}$ (V)			I_{ZT} Test Current (mA)	Z_{ZT} Maximum Dynamic Impedance @ $I_{ZT}, 25^\circ\text{C}$ (Ω)	I_L Leakage Current @ $V_L, 25^\circ\text{C}$ Max.		Temp. Coefficient Typical (%/°C)	ΔV_Z Voltage Regulation Typical (V)	I_{ZM} AVALANCHE CURRENT Max. (mA)			Package Outline No.
	10% Min.	Nominal	10% Max.			V_L (V)	I_L (mA)			@ 50°C	@ 100°C	@ 150°C	
Z4X5.1B	4.6	5.1	5.6	100	7.0	4.1	15.00	0.013	0.11	160	96	32	118
1N1765	5.0	5.6	6.2	100	1.2	4.5	5.00	0.021	0.14	150	88	29	118
1N1766	5.6	6.2	6.8	100	1.5	5.0	1.70	0.030	0.16	130	79	26	118
1N1767	6.1	6.8	7.5	100	1.7	5.4	0.95	0.037	0.20	120	72	24	118
1N1768	6.8	7.5	8.3	100	2.1	6.0	0.75	0.044	0.24	109	65	22	118
1N1769	7.4	8.2	9.0	100	2.4	6.6	0.64	0.050	0.28	100	60	20	118
1N1770	8.2	9.1	10.0	50	3.0	7.3	0.52	0.056	0.34	90	54	18	118
1N1771	9.0	10.0	11.0	50	3.5	8.0	0.44	0.062	0.41	82	49	16	118
1N1772	9.9	11.0	12.1	50	4.2	8.8	0.38	0.067	0.48	74	45	15	118
1N1773	10.8	12.0	13.2	50	5.0	9.6	0.34	0.071	0.57	68	41	14	118
1N1774	11.7	13.0	14.3	50	5.8	10.4	0.31	0.074	0.66	63	38	13	118
Z4X14B	12.6	14.0	15.4	50	6.6	11.2	0.29	0.077	0.75	58	35	12	118
1N1775	13.5	15.0	16.5	50	7.6	12.0	0.26	0.080	0.86	54	33	11	118
1N1776	14.4	16.0	17.6	50	8.6	12.8	0.24	0.082	0.97	51	31	10	118
	20% Min.		20% Max.								@ 125°C		
Z4XL6.2	4.96	6.2	7.44	20	9			.030		123	48		118
Z4XL7.5	6.00	7.5	9.00	20	12			.044		101	39		118
Z4XL9.1	7.28	9.1	10.9	20	15			.056		83	32		118
Z4XL12	9.80	12.0	14.4	20	24			.071		63	24		118
Z4XL14	11.2	14.0	16.8	20	3.0			.077		54	20		118
Z4XL16	12.8	16.0	19.2	20	40			.082		47	18		118
Z4XL18	14.4	18.0	21.6	20	50			.085		43	16		118
Z4XL20	16.0	20.0	24.0	20	60			.088		38	14		118
Z4XL22	17.6	22.0	26.0	20	72			.090		34	13		118

¹ Standard 1N or Z4X types are supplied to the $\pm 10\%$ of voltage values listed. For 5% tolerance; (1) Add "A" suffix to 1N number, i.e. 1N1776A. (2) Change "B" suffix on Z4X number to "A" i.e. Z4X5.1A. Standard Z4XL types are supplied to the $\pm 20\%$ of voltage values listed. For 10% tolerance, add suffix "B" to type number, i.e. Z4XL6.2B.

