

TYPE	MATERIAL	POLARITY	REPLACE- MENT	PAGE NUMBER	USE	MAXIMUM RATINGS						ELECTRICAL CHARACTERISTICS								
						P _D @ 25°C	T _J °C	V _{CB} (volts)	V _{CE} (volts)	Subscript	h _{FE} @ I _C		V _{CE(SAT)} @ I _C		h _{fr}	Subscript	f _T Units	Subscript		
											(min)	(max)	Units	Units						
2N635A	G	N			MSA	2.5M	J	85	25	20	R	80	240	10M	0.2	10M			10M	B
2N636	G	N			HSA	150M	A	85	20	20	O	35		200M					15M	B
2N636A	G	N			MSA	2.5M	J	85	25	15	R	100	300	10M	0.15	10M			15M	B
2N637	G	P	2N1535	7-60	PMS	60W	C	100		35	R	30	60	3.0A	1.5	3.0A				
2N637A	G	P	2N1537	7-60	PMS	60W	C	100		65	R	30	60	3.0A	1.5	3.0A				
2N637B	G	P	2N1538	7-60	PMS	60W	C	100		75	R	30	60	3.0A	1.5	3.0A				
2N638	G	P	2N1530	7-60	PMS	60W	C	100		35	R	20	40	3.0A	2.0	3.0A				
2N638A	G	P	2N1532	7-60	PMS	60W	C	100		65	R	20	40	3.0A	2.0	3.0A				
2N638B	G	P	2N1533	7-60	PMS	60W	C	100		75	R	20	40	3.0A	2.0	3.0A				
2N639	G	P	2N1530	7-60	PMS	37W	C	100		35	R	15		3.0A	2.5	3.0A				
2N639A	G	P	2N1532	7-60	PMS	37W	C	100		65	R	15		3.0A	2.5	3.0A				
2N639B	G	P	2N1533	7-60	PMS	37W	C	100		75	R	15		3.0A	2.5	3.0A				
2N640	G	P			AFC	80M	A	71	34											
2N641	G	P			AFC	80M	A	71	34											
2N642	G	P			AFC	80M	A	71	34											
2N643	G	P	2N2955	8-173	MSS	120M	A	71	30					10M					20M	T
2N644	G	P	2N2955	8-173	MSS	120M	A	71	30					10M					20M	T
2N645	G	P	2N2955	8-173	MSS	120M	A	71	30					10M					20M	T
2N646	G	N			AFC	100M	A	85	25	25	O	50	150	30M						
2N647	G	N			AFC	100M	A	71	25	25	O									
2N649	G	N			AFC	100M	A	71	20	18	O									
2N650	G	P	6-20		AFA	0.2W	A	100	45	30	R	30		10M	0.25	50M	30	E	0.75M	E
2N650A	G	P	6-20		AFA	0.2W	A	100	45	30	R	33		10M	0.25	50M	30	E	0.75M	E
2N651	G	P	6-20		AFA	0.2W	A	100	45	30	R	45		10M	0.25	50M	50	E	1.0M	E
2N651A	G	P	6-20		AFA	0.2W	A	100	45	30	R	45		10M	0.25	50M	50	E	1.0M	B
2N652	G	P	6-20		AFA	0.2W	A	100	45	30	R	80		10M	0.25	50M	100	E		
2N652A	G	P	6-20		AFA	0.2W	A	100	45	30	R	80		10M	0.25	50M	100	E		
2N653	G	P	6-20		AFA	0.2W	A	100	30	25	R	20		10M			30	E		
2N654	G	P	6-20		AFA	0.2W	A	100	30	25	R	40		10M			50	E		
2N655	G	P	6-20		AFA	0.2W	A	100	30	25	R	70		10M			100	E		
2N656	S	N	2N3498	8-232	AFA	4.0W	C	200	60	60	O	30	90	200M						
2N656A	S	N			AFA	5.0W	C	200	60	60	O	30	90	200M						
2N657	S	N	2N3498	8-232	AFA	4.0W	C	200	100	100	O	30	90	200M						
2N657A	S	N			AFA	5.0W	C	200	100	100	O	30	90	200M						
2N658	G	P			MSA	167M	A	85	25	16	O	25	80		3.45	150M			2.5M	B
2N659	G	P			MSA	167M	A	85	25	14	O	40	110		3.5	250M			5.0M	B
2N660	G	P			MSA	167M	A	85	25	11	O	60	150		3.5	400M			10M	B
2N661	G	P			MSA	167M	A	85	25	9.0	O	80		3.5	550M			15M	B	
2N662	G	P			MSA	167M	A	85	25	11	O	30		3.4	180M			4.0M	B	
2N663	G	P	2N2143	7-78	PMS	35W	C	100	50	25	O	25	75	500M	1.0	3.0A			15K	E
2N665	G	P	7-42		PMS	35W	C	95	80	40	O	40	80	500M	0.9	3.0A			20K	E
2N669	G	P	7-20		LPA	62.5W	C	100	40	30	S		250	0.5A					3.0K	E
2N670	G	P	2N3428	6-41	AFA	300M	A	85	40	40	V	40	250	1.0A	0.35	1.0A			500K	B
2N671	G	P	2N3428	6-41	AFA	800M	C	85	40	40	V	40	250	1.0A	0.35	1.0A			500K	B
2N672	G	P	2N3428	6-40	AFA	300M	A	85	25	25	S			0.2	400M					
2N673	G	P	2N3428	6-40	AFA	800M	C	85	25	25	S			0.2	400M					
2N674	G	P	2N3428	6-40	AFA	300M	A	85	75	75	V	40	250	1.0A	0.35	1.0A			400K	B
2N675	G	P	2N3428	6-40	AFA	800M	C	85	75	75	V	40	250	1.0A	0.35	1.0A			400K	B
2N677	G	P	2N1553	7-67	LPA	90W	C	100	50	30	S	20	60	10A	1.0	10A				
2N677A	G	P	2N1554	7-67	LPA	90W	C	100	60	40	S	20	60	10A	1.0	10A				
2N677B	G	P	2N1555	7-67	LPA	90W	C	100	90	70	S	20	60	10A	1.0	10A				
2N677C	G	P	2N1556	7-67	LPA	90W	C	100	100	80	S	20	60	10A	1.0	10A				
2N678	G	P	2N1557	7-67	LPA	90W	C	100	50	20	O	50	100	10A	1.0	10A				
2N678A	G	P	2N1558	7-67	LPA	90W	C	100	60	30	O	50	100	10A	1.0	10A				
2N678B	G	P	2N1559	7-67	LPA	90W	C	100	90	60	O	50	100	10A	1.0	10A				
2N678C	G	P	2N1560	7-67	LPA	90W	C	100	100	70	O	50	100	10A	1.0	10A				
2N679	G	N			MSS	150M	A	85	25	20	X	20		30M	0.3	100M				
2N680	G	P	2N1191	6-30	AFA	150M	A	75	20	20	S	18	165	50M	0.75	50M	15	E	2.0M	B
2N681 thru	Thyristors, see Table on Page 1-154																			
2N692	G	P			RFA	0.1W	A	100	30	15	O	15		2.0M			0.9	B	340M	T
2N694	G	P			HSS	75M	A	100	15	15	S	25		10M	1.0	50M				
2N695	G	P			HSS	75M	A	100	15	15	S	25		10M	1.0	50M				
2N696	S	N	2N2218	8-15	MSA	600M	A	175	60	40	R	20	60	150M	1.5	150M	15	E	40M	T
2N696A	S	N	2N2218	8-108	MSA	800M	A	300	60	35	O	20	60	150M	1.5	150M			40M	T
2N697	S	N	2N2218	8-15	MSA	600M	A	175	60	40	R	40	120	150M	1.5	150M	25	E	40M	T
2N697A	S	N	2N2218	8-108	MSA	800M	A	300	60	35	O	40	120	150M	1.5	150M	15	E	50M	T
2N698	S	N	2N3498	8-232	MSA	800M	A	200	120	80	R	20	60	150M	1.2	50M	15	E	40M	T
2N699	S	N		8-16	MSA	600M	A	175	120	80	R	40	120	150M	5.0	150M	35	E	50M	T
2N699A	S	N			MSA	800M	A	300	120	80	R	40	120	150M	5.0	150M	35	E	50M	T
2N699B	S	N	2N3498	8-232	MSA	870M	A	200	120	100	R	40	120	150M	1.2	50M	35	E	60M	T
2N700	G	P			RFA	75M	A	100	25	20	S	1.5		2.0M			4.0	E	270M	T
2N700A	G	P			RFA	75M	A	100	25	25	O	1.5		6.0M			4.0	E	360M	T
2N702	S	N			HSS	300M	A	175	25	25	O	20	60	10M	0.5	10M			70M	T
2N703	S	N			HSS	300M	A	175	25</											

THYRISTOR INDEX

2N681-2N1601

TYPE	REPLACEMENT	PAGE NUMBER	I _f A	V _{FOM} /V _{ROM} V	T _J °C	I _{GT} mA	V _{GT} V
2N681		4-10	25	25	125	40	2.0
2N681A			28	25	125	40	2.0
2N682		4-10	25	50	125	40	2.0
2N682A			28	50	125	40	2.0
2N683		4-10	25	100	125	40	2.0
2N683A			28	100	125	40	2.0
2N684		4-10	25	150	125	40	2.0
2N684A			28	150	125	40	2.0
2N685		4-10	25	200	125	40	2.0
2N685A			28	200	125	40	2.0
2N686		4-10	25	250	125	40	2.0
2N686A			28	250	125	40	2.0
2N687		4-10	25	300	125	40	2.0
2N687A			28	300	125	40	2.0
2N688		4-10	25	400	125	40	2.0
2N688A			28	400	125	40	2.0
2N689		4-10	25	500	125	40	2.0
2N689A			28	500	125	40	2.0
2N690			25	600	125	40	2.0
2N690A			25	600	125	40	2.0
2N691			25	700	125	40	2.0
2N692			25	800	125	40	2.0
2N764*			0.39	30	125	1.0	1.0
2N765*			0.20	60	125	1.0	1.0
2N766*			0.20	100	125	1.0	1.0
2N767*			0.20	200	125	1.0	1.0
2N876			0.35	15	150	0.2	0.8
2N877			0.35	30	150	0.2	0.8
2N878			0.35	60	150	0.2	0.8
2N879			0.35	100	150	0.2	0.8
2N880			0.35	150	150	0.2	0.8
2N881			0.35	200	150	0.2	0.8
2N882			0.35	300	150	0.2	0.8
2N883			0.35	400	150	0.2	0.8
2N884			0.35	15	150	0.02	0.6
2N885			0.35	30	150	0.02	0.6
2N886			0.35	60	150	0.02	0.6
2N887			0.35	100	150	0.02	0.6
2N888			0.35	150	150	0.02	0.6
2N889			0.35	200	150	0.02	0.6
2N890			0.35	300	150	0.02	0.6
2N891			0.35	400	150	0.02	0.6
2N892*			0.250	15	125	0.05	0.70
2N893*			0.250	15	125	0.05	0.70
2N894*			0.250	30/15	125	0.05	0.70
2N895*			0.250	30/15	125	0.05	0.70
2N896*			0.250	60/15	125	0.05	0.70
2N897*			0.250	60/15	125	0.05	0.70
2N898*			0.250	100/15	125	0.05	0.70
2N899*			0.250	100/15	125	0.05	0.70
2N900*			0.250	200/15	125	0.05	0.70
2N901*			0.250	200/15	125	0.05	0.70
2N948			0.26	30	150	0.02	1.0
2N949			0.26	60	150	0.02	1.0
2N950			0.26	100	150	0.02	1.0
2N951			0.26	200	150	0.02	1.0
2N1595		4-13	1.6	50	125	10	3.0
2N1595A			1.6	50	150	2.0	2.0
2N1596		4-13	1.6	100	125	10	3.0
2N1596A			1.6	100	150	2.0	2.0
2N1597		4-13	1.6	200	125	10	3.0
2N1597A			1.6	200	150	2.0	2.0
2N1598		4-13	1.6	300	125	10	3.0
2N1598A			1.6	300	150	2.0	2.0
2N1599		4-13	1.6	400	125	10	3.0
2N1599A			1.6	400	150	2.0	2.0
2N1600	2N4168	4-26	4.0	50	125	10	3.0
2N1600A			4.0	50	125	4.5	3.0
2N1601	2N4169	4-26	4.0	100	125	10	3.0

2N681 thru 2N689



CASE 64
(TO-48)

$$I_f = 25 \text{ A RMS}$$

$$V_{ROM(rep)} = 25\text{-}500 \text{ V}$$

Industrial-type, silicon controlled rectifiers in a stud package with current handling capability to 25 amperes at junction temperatures up to 125°C.

MAXIMUM RATINGS ($T_J = 125^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Reverse Blocking Voltage* †	$V_{ROM(rep)}^{*\dagger}$	25	Volts
2N681		50	
2N682		100	
2N683		150	
2N684		200	
2N685		250	
2N686		300	
2N687		400	
2N688		500	
2N689	500		
Peak Reverse Blocking Voltage* (Transient) (non-recurrent $t = 5 \text{ ms max.}$)	$V_{ROM(non-rep)}^*$	35	Volts
2N681		75	
2N682		150	
2N683		225	
2N684		300	
2N685		350	
2N686		400	
2N687		500	
2N688		600	
2N689	600		
Forward Current RMS (all conduction angles)	I_f	25	Amp
Peak Forward Surge Current (One cycle, 60 Hz, $T_J = -65 \text{ to } +125^\circ\text{C}$)	$I_{FM(surge)}$	200	Amp
Circuit Fusing Considerations ($T_J = -65 \text{ to } +125^\circ\text{C}$, $t \leq 8.3 \text{ ms}$)	I^2t	165	A^2s
Peak Gate Power-Forward	P_{GFM}	5.0	Watts
Average Gate Power-Forward	$P_{GF(AV)}$	0.5	Watt
Peak Gate Current-Forward	I_{GFM}	2.0	Amp
Peak Gate Voltage-Forward	V_{GFM}	10	Volts
Reverse	V_{GRM}	5.0	
Operating Junction Temperature Range	T_J	-65 to +125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +150	$^\circ\text{C}$
Stud Torque	—	30	in.-lb.

† V_{ROM} for all types can be applied on a continuous dc basis without incurring change.

* $V_{ROM(rep)}$ ratings apply for zero or negative gate voltage.

———— Silicon Controlled Rectifiers ————

2N681 thru 2N689 (continued)

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Units
Peak Forward Blocking Voltage ($T_J = 125^\circ\text{C}$)	V_{FOM}	25	—	—	Volts
2N681		50	—	—	
2N682		100	—	—	
2N683		150	—	—	
2N684		200	—	—	
2N685		250	—	—	
2N686		300	—	—	
2N687		400	—	—	
2N688		500	—	—	
2N689					
Peak Forward or Reverse Blocking Current ($T_J = 125^\circ\text{C}$)	I_{FOM} I_{ROM}	—	—	10.0	mA
2N681 - 2N684	—	—	10.0		
2N685	—	—	10.0		
2N686	—	—	10.0		
2N687	—	—	8.0		
2N688	—	—	6.0		
2N689					
Gate Trigger Current (Continuous dc) (Anode Voltage = 7 Vdc, $R_L = 50 \Omega$)	I_{GT}	—	10	25	mA
Gate Trigger Voltage (Continuous dc) (Anode Voltage = 7 Vdc, $R_L = 50 \Omega$)	V_{GT}	0.25	—	3.0	Volts
Holding Current (Anode Voltage = 7 Vdc, Gate Open)	I_{HO}	—	20	—	mA
Forward On Voltage ($I_F = 20 \text{ Adc}$)	V_F	—	1.1	1.5	Volts
Turn-On Time ($I_F = 10 \text{ A}$, $I_G = 200 \text{ mA}$)	t_{on}	—	1.0	—	μs
Turn-Off Time ($I_F = 10 \text{ A}$; $I_R = 10 \text{ A}$, $dv/dt = 30 \text{ V}/\mu\text{s}$ min, $T_J = 125^\circ\text{C}$) ($V_{FXM} = \text{rated voltage}$) ($V_{RXM} = \text{rated voltage}$)	t_{off}	—	30	—	μs
Forward Voltage Application Rate (Gate open, $T_J = 125^\circ\text{C}$)	dv/dt	—	30	—	$\text{V}/\mu\text{s}$
Thermal Resistance (Junction to Case)	θ_{JC}	—	1.0	2.0	$^\circ\text{C}/\text{W}$

2N681 thru 2N689 (continued)

