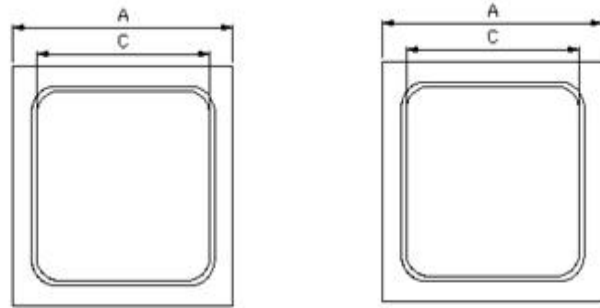


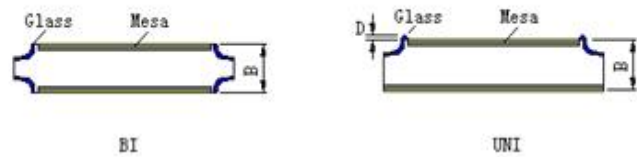
### Features

- Glass passivated chip
- Low inductance
- Excellent clamping capability
- Very fast response time
- 400 W peak pulse power capability with a 10/1000  $\mu$ s waveform
- Compatible with soldering



### Devices for Bidirectional Applications

- For bi-directional devices, use suffix C or CA  
Electrical characteristics apply in both directions



### Process Details

Chip Type	PDPW (pcs/4"wafer)	Size (mil)				Surface Metalizatio
		A (+1/-2)	B ( $\pm 2$ )	C ( $\pm 2$ )	D ( $\pm 1$ )	
GDTP4KE/SMAJ/P4SMA	3,011	60	13	37	1.5	Ni(0.6~1um) /

Notes: "A" is 66mil when Breakdown Voltage is 200 Volts and more.

### Maximum Ratings & Thermal Characteristics

(TA = 25 °C unless otherwise noted)

Parameter	Symbol	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 $\mu$ s waveform (see fig. 1)	$P_{PPM}$	400	W
Peak pulse current with a waveform (see fig. 3 , single pulse)	$I_{PPM}$	See Next Table	A

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  per Fig. 2

**GDT SMAJ5.0 thru GDT SMAJ440CA**

Type	Breakdown Voltage at $I_T^{(1)}$ $V_{(BR)}$ (V)		Test Current	Stand-off Voltage	Maximum Reverse Leakage at $V_{WM}$	Maximum Peak Pulse Surge Current $(I_{PPM})^{(2)}$	Maximum Clamping Voltage at $I_{PPM}$
	Min	Max	$I_T$ (mA)	$V_{WM}$ (V)	$I_D$ ( $\mu$ A)	$I_{PPM}$ (A)	$V_C$ (V)
GDT SMAJ5.0A	6.4	7.07	10	5	800	43.5	9.2
GDT SMAJ6.0A	6.67	7.37	10	6	800	38.8	10.3
GDT SMAJ6.5A	7.22	7.98	10	6.5	500	35.7	11.2
GDT SMAJ7.0A	7.78	8.6	10	7	200	33.3	12
GDT SMAJ7.5A	8.33	9.21	1	7.5	100	31	12.9
GDT SMAJ8.0A	8.89	9.83	1	8	50	29.4	13.6
GDT SMAJ8.5A	9.44	10.4	1	8.5	10	27.8	14.4
GDT SMAJ9.0A	10	11.1	1	9	5	26	15.4
GDT SMAJ10A	11.1	12.3	1	10	1	23.5	17
GDT SMAJ11A	12.2	13.5	1	11	1	22	18.2
GDT SMAJ12A	13.3	14.7	1	12	1	20.1	19.9
GDT SMAJ13A	14.4	15.9	1	13	1	18.6	21.5
GDT SMAJ14A	15.6	17.2	1	14	1	17.2	23.2
GDT SMAJ15A	16.7	18.5	1	15	1	16.4	24.4
GDT SMAJ16A	17.8	19.7	1	16	1	15.4	26
GDT SMAJ17A	18.9	20.9	1	17	1	14.5	27.6
GDT SMAJ18A	20	22.1	1	18	1	13.7	29.2
GDT SMAJ20A	22.2	24.5	1	20	1	12.3	32.4
GDT SMAJ22A	24.4	26.9	1	22	1	11.3	35.5
GDT SMAJ24A	26.7	29.5	1	24	1	10.3	38.9
GDT SMAJ26A	28.9	31.9	1	26	1	9.5	42.1
GDT SMAJ28A	31.1	34.4	1	28	1	8.8	45.4
GDT SMAJ30A	33.3	36.8	1	30	1	8.3	48.4
GDT SMAJ33A	36.7	40.6	1	33	1	7.5	53.3
GDT SMAJ36A	40	44.2	1	36	1	6.9	58.1
GDT SMAJ40A	44.4	49.1	1	40	1	6.2	64.5
GDT SMAJ43A	47.8	52.8	1	43	1	5.8	69.4
GDT SMAJ45A	50	55.3	1	45	1	5.5	72.7
GDT SMAJ48A	53.3	58.9	1	48	1	5.2	77.4
GDT SMAJ51A	56.7	62.7	1	51	1	4.9	82.4
GDT SMAJ54A	60	66.3	1	54	1	4.6	87.1
GDT SMAJ58A	64.4	71.2	1	58	1	4.3	93.6
GDT SMAJ60A	66.7	73.7	1	60	1	4.1	96.8
GDT SMAJ64A	71.1	78.6	1	64	1	3.9	103
GDT SMAJ70A	77.8	86	1	70	1	3.5	113
GDT SMAJ75A	83.3	92.1	1	75	1	3.3	121
GDT SMAJ78A	86.7	95.8	1	78	1	3.2	126
GDT SMAJ85A	94.4	104	1	85	1	2.2	137
GDT SMAJ90A	100	111	1	90	1	2.1	146
GDT SMAJ100A	111	123	1	100	1	1.9	162
GDT SMAJ110A	122	135	1	110	1	1.7	177
GDT SMAJ120A	133	147	1	120	1	1.6	193
GDT SMAJ130A	144	159	1	130	1	1.4	209
GDT SMAJ150A	167	185	1	150	1	1.2	243
GDT SMAJ160A	178	197	1	160	1	1.2	259
GDT SMAJ170A	189	209	1	170	1	1.09	275



Type	Breakdown Voltage at $I_T^{(1)}$ $V_{(BR)}$ (V)		Test Current $I_T$ (mA)	Stand-off Voltage $V_{WM}$ (V)	Maximum Reverse Leakage at $V_{WM}$ $I_D$ ( $\mu$ A)	Maximum Peak Pulse Surge Current $(^{(2)})$ $I_{PPM}$ (A)	Maximum Clamping Voltage at $I_{PPM}$ $V_C$ (V)
	Min	Max					
GDT SMAJ180A	201	222	1	180	1	1.4	292
GDT SMAJ200A	224	247	1	200	1	1.2	324
GDT SMAJ220A	246	272	1	220	1	1.1	356
GDT SMAJ250A	279	309	1	250	1	1	405
GDT SMAJ300A	335	371	1	300	1	0.8	486
GDT SMAJ350A	391	432	1	350	1	0.7	567
GDT SMAJ400A	447	494	1	400	1	0.6	648
GDT SMAJ440A	492	543	1	440	1	0.6	713

Notes: (1)  $V_{(BR)}$  measured after  $I_T$  applied for 300us square wave pulse or equivalent

(2) Surge current waveform Per Fig. 3 and derate Per Fig. 2

(3) For bi-directional types having  $V_{WM}$  of 10 Volts and less, the  $I_D$  limit is doubled

(4) Ratings at 25°C ambient temperature unless otherwise specified.

#### GDTP4KE6.8 thru GDTP4KE550CA

Type	Breakdown Voltage at $I_T^{(1)}$ $V_{(BR)}$ (V)		Test Current $I_T$ (mA)	Stand-off Voltage $V_{WM}$ (V)	Maximum Reverse Leakage at $V_{WM}$ $I_D$ ( $\mu$ A)	Maximum Peak Pulse Surge Current $(^{(2)})$ $I_{PPM}$ (A)	Maximum Clamping Voltage at $I_{PPM}$ $V_C$ (V)
	Min	Max					
GDTP4KE6.8A	6.45	7.14	10	5.8	1000	38.1	10.5
GDTP4KE7.5A	7.13	7.88	10	6.4	500	35.4	11.3
GDTP4KE8.2A	7.79	8.61	10	7.02	200	33.1	12.1
GDTP4KE9.1A	8.65	9.55	1	7.78	50	29.9	13.4
GDTP4KE10A	9.5	10.5	1	8.55	10	27.6	14.5
GDTP4KE11A	10.5	11.6	1	9.4	5	25.6	15.6
GDTP4KE12A	11.4	12.6	1	10.2	1	24	16.7
GDTP4KE13A	12.4	13.7	1	11.1	1	22	18.2
GDTP4KE15A	14.3	15.8	1	12.8	1	18.9	21.2
GDTP4KE16A	15.2	16.8	1	13.6	1	17.8	22.5
GDTP4KE18A	17.1	18.9	1	15.3	1	15.9	25.2
GDTP4KE20A	19	21	1	17.1	1	14.4	27.7
GDTP4KE22A	20.9	23.1	1	18.8	1	13.1	30.6
GDTP4KE24A	22.8	25.2	1	20.5	1	12	33.2
GDTP4KE27A	25.7	28.4	1	23.1	1	10.7	37.5
GDTP4KE30A	28.5	31.5	1	25.6	1	9.7	41.4
GDTP4KE33A	31.4	34.7	1	28.2	1	8.8	45.7
GDTP4KE36A	34.2	37.8	1	30.8	1	8	49.9
GDTP4KE39A	37.1	41	1	33.3	1	7.4	53.9
GDTP4KE43A	40.9	45.2	1	36.8	1	6.7	59.3
GDTP4KE47A	44.7	49.4	1	40.2	1	6.2	64.8
GDTP4KE51A	48.5	53.6	1	43.6	1	5.7	70.1
GDTP4KE56A	53.2	58.8	1	47.8	1	5.2	77
GDTP4KE62A	58.9	65.1	1	53	1	4.7	85
GDTP4KE68A	64.6	71.4	1	58.1	1	4.3	92
GDTP4KE75A	71.3	78.8	1	64.1	1	3.9	103

Type	Breakdown Voltage at $I_T^{(1)}$ $V_{(BR)}$ (V)		Test Current	Stand-off Voltage	Maximum Reverse Leakage at $V_{WM}$	Maximum Peak Pulse Surge Current $I_{PPM}^{(2)}$	Maximum Clamping Voltage at $I_{PPM}$
	Min	Max	$I_T$ (mA)	$V_{WM}$ (V)	$I_D$ ( $\mu$ A)	$I_{PPM}$ (A)	$V_C$ (V)
GDTP4KE82A	77.9	86.1	1	70.1	1	3.5	113
GDTP4KE91A	86.5	95.5	1	77.8	1	3.2	125
GDTP4KE100A	95	105	1	85.5	1	2.9	137
GDTP4KE110A	105	116	1	94	1	2.6	152
GDTP4KE120A	114	126	1	102	1	2.4	165
GDTP4KE130A	124	137	1	111	1	2.2	179
GDTP4KE150A	143	158	1	128	1	1.9	207
GDTP4KE160A	152	168	1	136	1	1.8	219
GDTP4KE170A	162	179	1	145	1	1.7	234
GDTP4KE180A	171	189	1	154	1	1.6	246
GDTP4KE200A	190	210	1	171	1	1.5	274
GDTP4KE220A	209	231	1	185	1	1.2	328
GDTP4KE250A	237	263	1	214	1	1.2	344
GDTP4KE300A	285	315	1	256	1	1	414
GDTP4KE350A	333	368	1	300	1	0.83	482
GDTP4KE400A	380	420	1	342	1	0.73	548
GDTP4KE440A	418	462	1	376	1	0.66	602
GDTP4KE480A	456	504	1	408	1	0.61	658
GDTP4KE510A	485	535	1	434	1	0.57	698
GDTP4KE530A	503.5	556.5	1	450	1	0.55	725
GDTP4KE540A	513	567	1	459	1	0.54	740
GDTP4KE550A	522.5	577.5	1	467	1	0.52	760

**Notes:** (1)  $V_{(BR)}$  measured after  $I_T$  applied for 300us square wave pulse or equivalent

(2) Surge current waveform Per Fig. 3 and derate Per Fig. 2

(3) For bi-directional types having  $V_{WM}$  of 10 Volts and less, the  $I_D$  limit is doubled

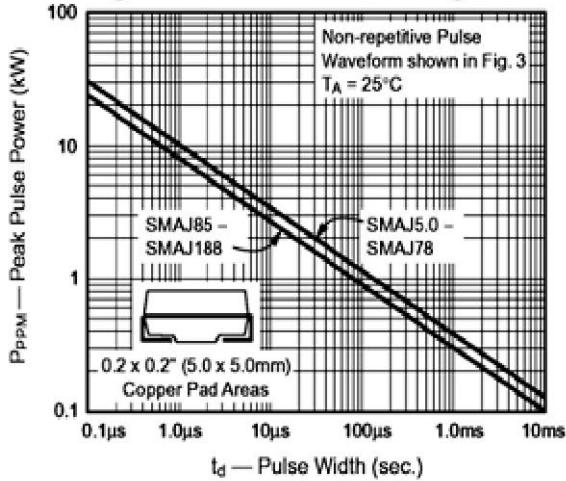
(4) Ratings at 25°C ambient temperature unless otherwise specified.

(5) Sameness with P4SMAX

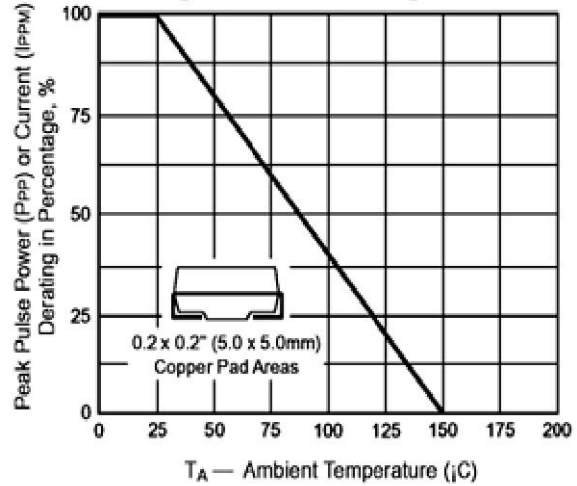
### Characteristic Curves ( $T_A=25^\circ\text{C}$ unless otherwise noted)

GDT SMAJ5.0 thru GDT SMAJ440CA / GDTP4SMA6.8 thru GDTP4SMA550CA

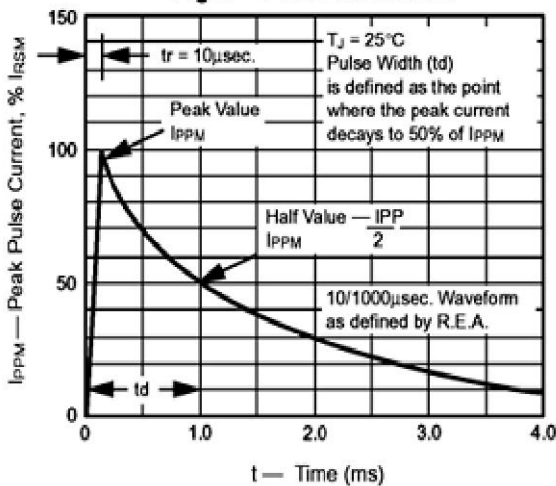
**Fig. 1 – Peak Pulse Power Rating Curve**



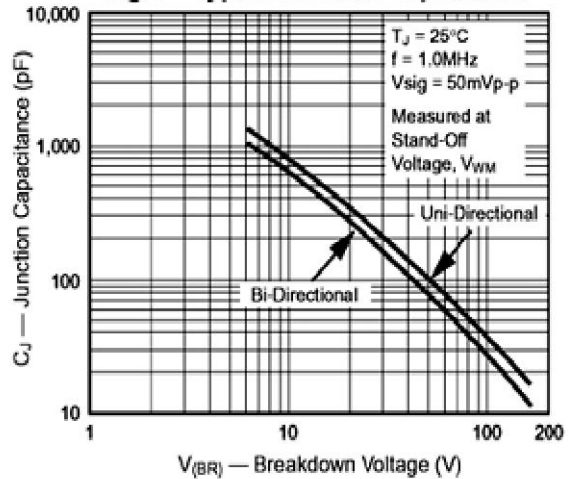
**Fig. 2 – Pulse Derating Curve**



**Fig. 3 – Pulse Waveform**

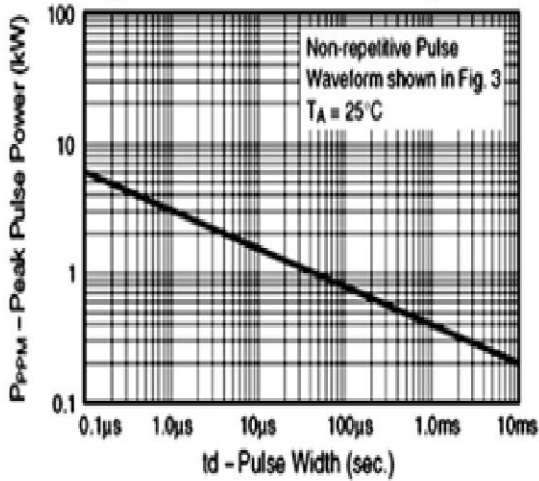


**Fig. 4 – Typical Junction Capacitance**

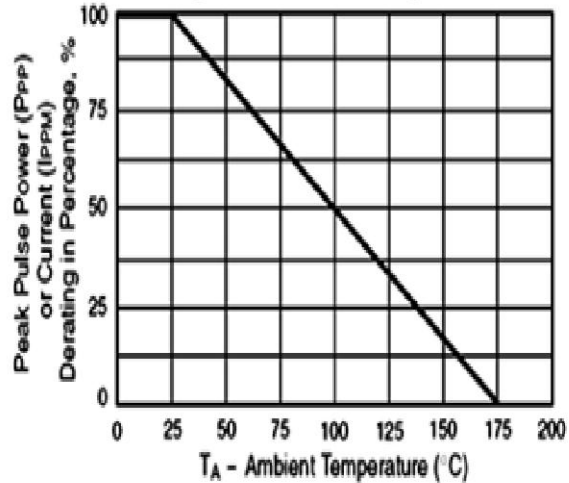


GDP4KE6.8 thru GDP4KE550CA

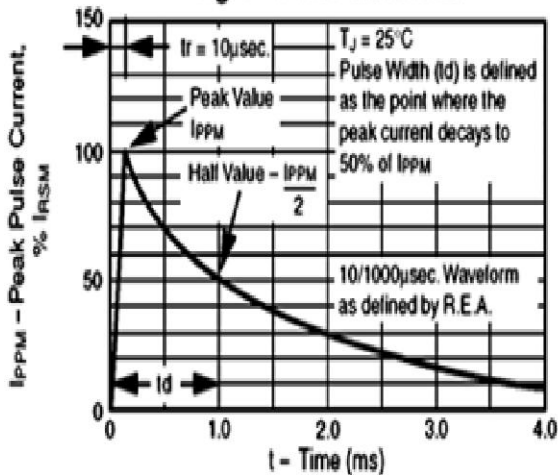
**Fig. 1 – Peak Pulse Power Rating Curve**



**Fig. 2 – Pulse Derating Curve**



**Fig. 3 – Pulse Waveform**



**Fig. 4 – Typ. Junction Capacitance Uni-Directional**

