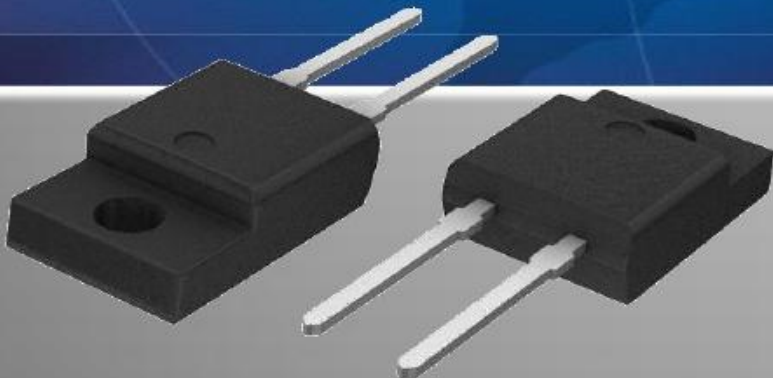


Trench Schottky Barrier Rectifiers



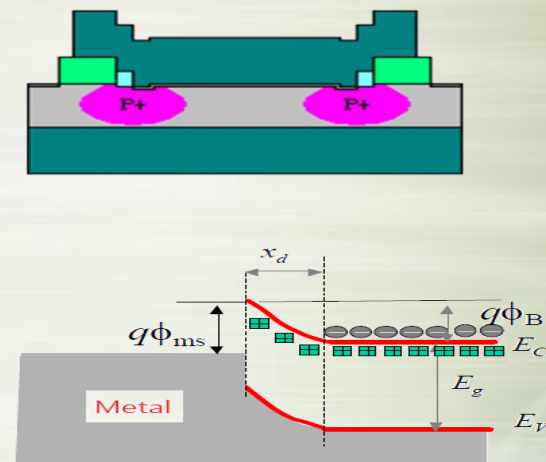
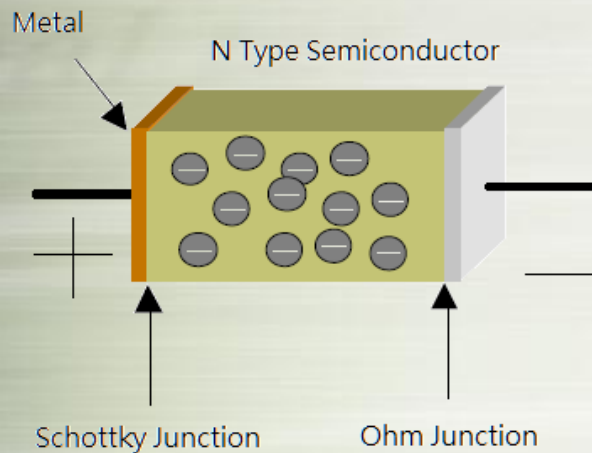
Planar Schottky Technology

目前對於交換式電源供應器的電路應用，大家最關注的是如何去改善其傳統蕭特基整流器的特性。

其整流特性希望是降低順向導通電壓以及能夠快速的順逆向切換。

蕭特基整流器的順向導通電壓能夠藉由蕭特基能障的調降而降低，但是不幸地，較低的蕭特基能障會導致漏電流變大而使之在操作的時候影響其耐較高溫度的能力。

蕭特基整流器如果在製造時使用低能障製程有可能會導致其軟崩潰(Soft Breakdown)造成失效。



Trench Schottky Technology

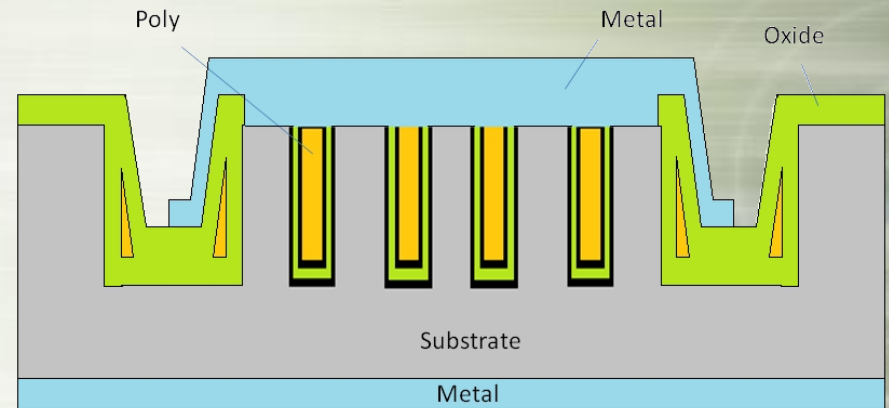
新式 Trench SKY 結構在溝渠底部使用相反參雜的離子植入將溝渠底部包覆形成一個相反參雜的區域，在不影響順向特性的情況之下，明顯增加逆向耐壓的能力。

Trench SKY比Planar SKY降低15%的正向電壓降（V F）和反向漏電流4倍的改善。

Trench SKY也提供了更好的反向能量吸收能力，同時保持相當的開關特性，所以Trench SKY比Planar SKY在額定功率為125°C與100°C下有更高的最大結溫能力（TJMAX）。

Trench SKY 的優勢

- 1.Lower VF
- 2.Lower IR
- 3.High Temp. ability
4. Reverse better energy absorption capacity



Trench SKY Product Line

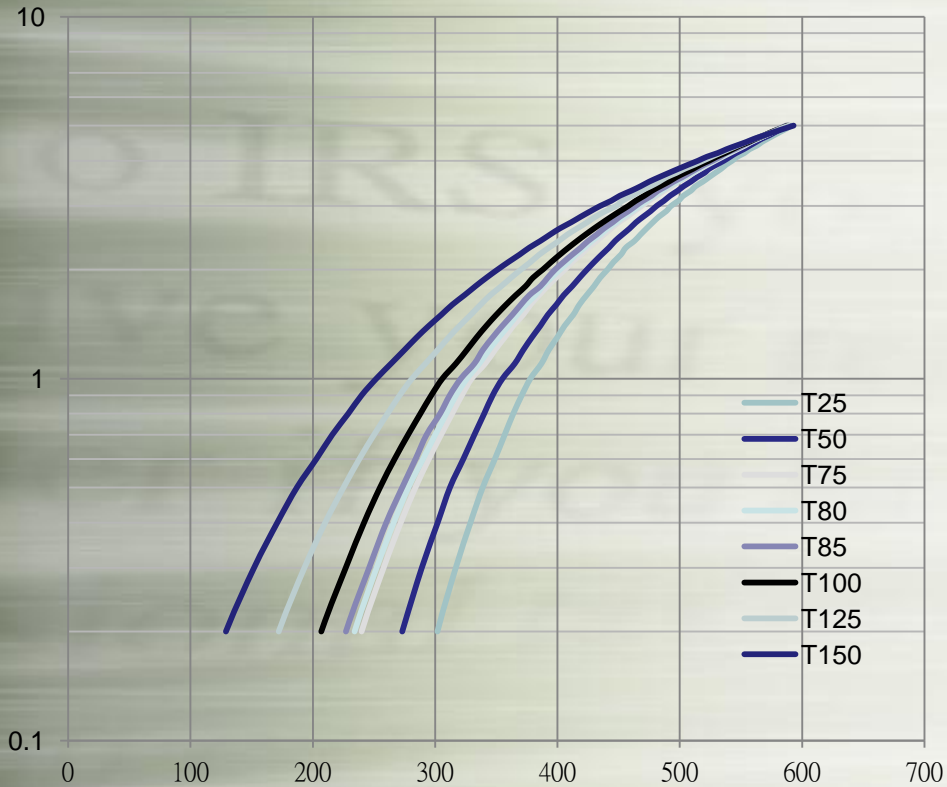
Part Number	IO(A)	VR(V)	VF(Max) @ 25C		IR(Max) @ 25C		Package
			VFM(mV)	IFM(A)	IR(mA)	VR(V)	
C14AG	1	40	400	1A @ 25°C	0.2	40V @ 25°C	SMA
C14ASG	1	40	400	1A @ 25°C	0.2	40V @ 25°C	SMAS
CB140WG-ST	1	40	400	1A @ 25°C	0.2	40V @ 25°C	SOD-123ST
CB140WG-S	1	40	400	1A @ 25°C	0.2	40V @ 25°C	SOD-123S
C24AG	2	40	470	2A @ 25°C	0.2	40V @ 25°C	SMA
C24ASG	2	40	470	2A @ 25°C	0.2	40V @ 25°C	SMAS
CB240WG-ST	2	40	470	2A @ 25°C	0.2	40V @ 25°C	SOD-123ST
CB240WG-S	2	40	470	2A @ 25°C	0.2	40V @ 25°C	SOD-123S
C34AG	3	40	500	3A @ 25°C	0.2	40V @ 25°C	SMA
C34ASG	3	40	500	3A @ 25°C	0.2	40V @ 25°C	SMAS
CB340WG-S	3	40	500	3A @ 25°C	0.2	40V @ 25°C	SOD-123S
CB340WG-ST	3	40	500	3A @ 25°C	0.2	40V @ 25°C	SDO-123ST
CP10S100SG	10	100	700	10A @ 25°C	0.5	100V @ 25°C	TO-277
CP20L100SG	10	100	730	20A @ 25°C	1	100V @ 25°C	TO-277

Trench SKY Product Line

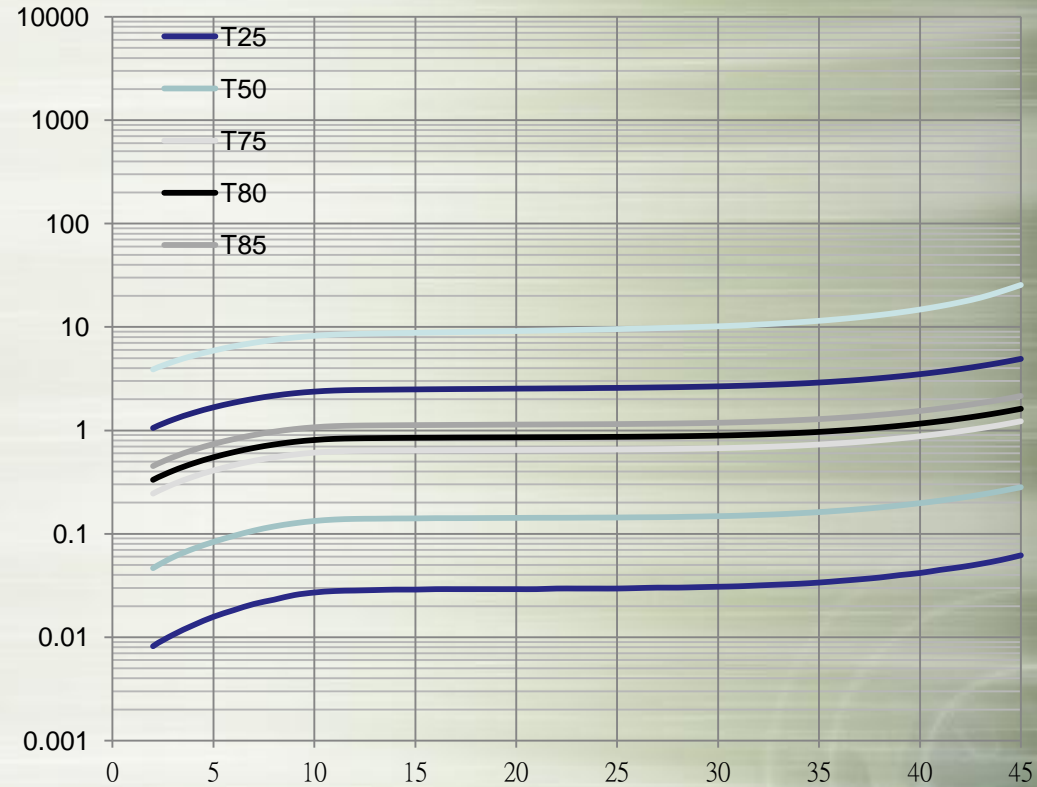
Part Number	IO(A)	VR(V)	VF(Max) @ 25C		IR(Max) @ 25C		Package
			VFM(mV)	IFM(A)	IR(mA)	VR(V)	
C10L45CT	10	45	470	5A @ 25°C	0.5	45V @ 25°C	TO-220AB
C10S45CT	10	45	470	5A @ 25°C	0.5	45V @ 25°C	TO-220AB
C10L100CT	10	100	720	5A @ 25°C	0.8	100V @ 25°C	TO-220AB
C10S100CT	10	100	670	5A @ 25°C	0.2	100V @ 25°C	TO-220AB
C10S120CT	10	120	700	5A @ 25°C	0.1	120V @ 25°C	TO-220AB
CF10L45CT	10	45	470	5A @ 25°C	0.5	45V @ 25°C	ITO-220AB
CF10S45CT	10	45	470	5A @ 25°C	0.5	45V @ 25°C	ITO-220AB
CF10L100CT	10	100	720	5A @ 25°C	0.8	100V @ 25°C	ITO-220AB
CF10S100CT	10	100	670	5A @ 25°C	0.2	100V @ 25°C	ITO-220AB
CF10S120CT	10	120	700	5A @ 25°C	0.1	120V @ 25°C	ITO-220AB
C2045CT	20	45	540	10A @ 25°C	0.5	45V @ 25°C	TO-220AB
C20L45CT	20	45	500	10A @ 25°C	0.5	45V @ 25°C	TO-220AB
C20L100CT	20	100	790	10A @ 25°C	0.8	100V @ 25°C	TO-220AB
C20L120CT	20	120	900	10A @ 25°C	0.7	120V @ 25°C	TO-220AB
CF2045CT	20	45	540	10A @ 25°C	0.5	45V @ 25°C	ITO-220AB
CF20L45CT	20	45	500	10A @ 25°C	0.5	45V @ 25°C	ITO-220AB
CF20L100CT	20	100	790	10A @ 25°C	0.8	100V @ 25°C	ITO-220AB
CF20L120CT	20	120	900	10A @ 25°C	0.7	120V @ 25°C	ITO-220AB
C3045CT	30	45	550	15A @ 25°C	0.5	45V @ 25°C	TO-220AB
C30100CT	30	100	850	15A @ 25°C	0.2	100V @ 25°C	TO-220AB
C30L100CT	30	100	800	15A @ 25°C	0.2	100V @ 25°C	TO-220AB
C30L120CT	30	120	830	15A @ 25°C	0.2	120V @ 25°C	TO-220AB
CF3045CT	30	45	550	15A @ 25°C	0.5	45V @ 25°C	ITO-220AB
CF30100CT	30	100	850	15A @ 25°C	0.2	100V @ 25°C	ITO-220AB
CF30L100CT	30	100	800	15A @ 25°C	0.2	100V @ 25°C	ITO-220AB
CF30L120CT	30	120	830	15A @ 25°C	0.7	120V @ 25°C	ITO-220AB
C40L100CT	40	100	730	20A @ 25°C	0.5	100V @ 25°C	TO-220AB
C40L120CT	40	120	830	20A @ 25°C	0.5	120V @ 25°C	TO-220AB

1~3A IV Curve

Forward



Reverse



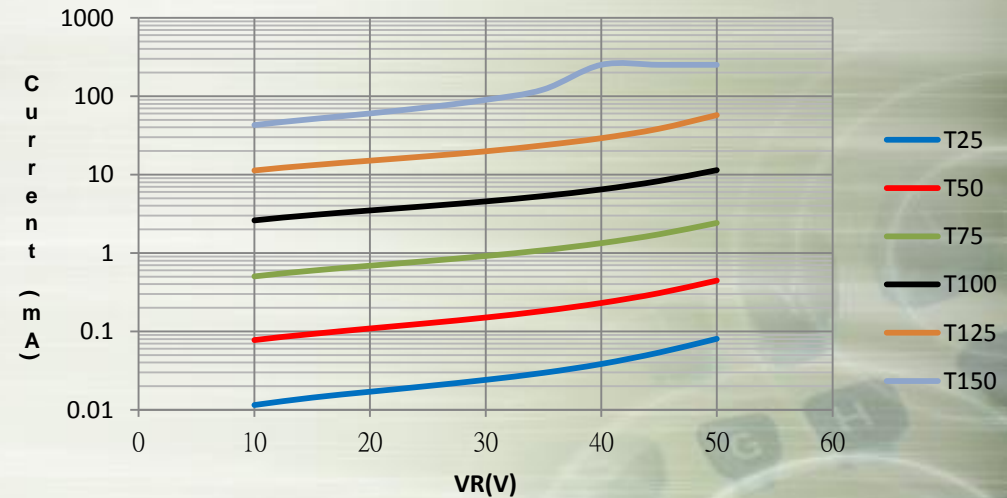
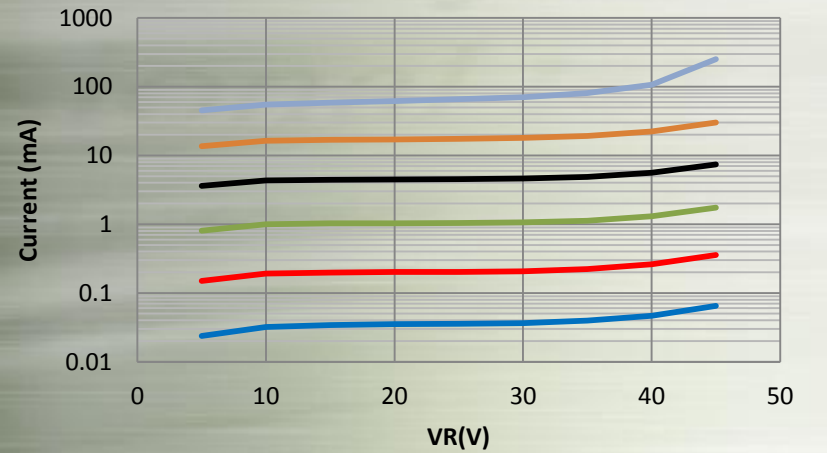
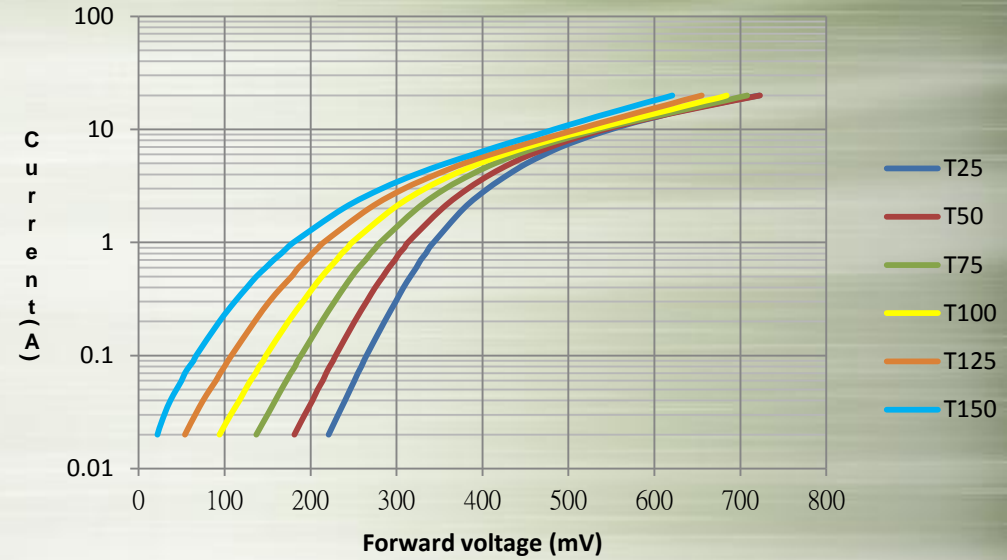
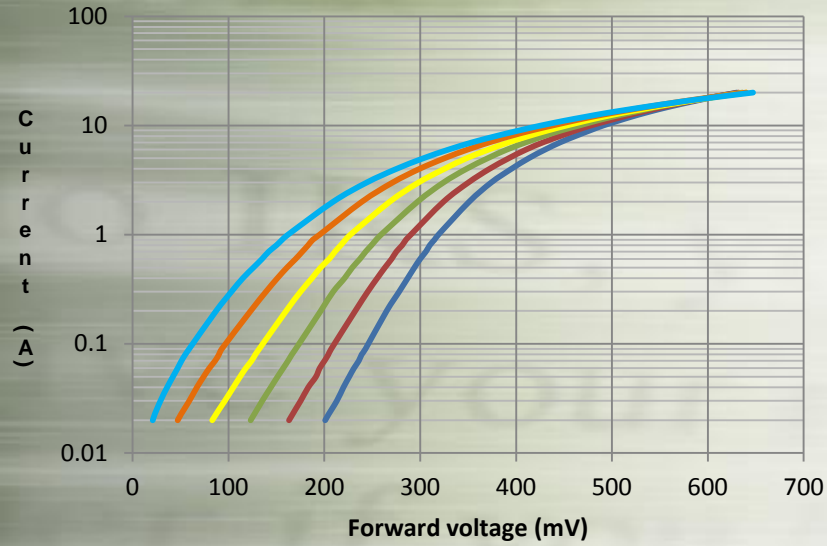
Low VF
Low IR

T(°C)	T25	T50	T75	T80	T85	T100	T125
VF(mV)	378	355	330	326	321	306	281
IR(mA)	0.0418	0.1977	0.8749	1.1636	1.539	3.4914	14.784

20A 45V VF & IR(Trench vs Planar)

25C						
Part number	1A	2A	3A	5A	10A	IR@45V
C2045CT	319	351	374	413	411	65uA
SB2045CT	343	378	406	451	549	53.7uA
50C						
Part number	1A	2A	3A	5A	10A	IR@45V
C2045CT	290	324	350	392	478	355.2uA
SB2045CT	313	353	383	433	542	307.3uA
75C						
Part number	1A	2A	3A	5A	10A	IR@45V
C2045CT	259	297	324	370	466	1.73mA
SB2045CT	281	324	357	414	535	1.73mA
100C						
Part number	1A	2A	3A	5A	10A	IR@45V
C2045CT	227	268	298	348	453	7.38mA
SB2045CT	248	296	333	396	527	8.28mA
125C						
Part number	1A	2A	3A	5A	10A	IR@45V
C2045CT	195	239	271	325	438	30.11mA
SB2045CT	215	268	309	378	510	38.35mA
150C						
Part number	1A	2A	3A	5A	10A	IR@45V
C2045CT	162	209	244	303	426	250.36mA
SB2045CT	180	238	283	357	483	Over

20A 45V VF/IR Curve



C2045CT

SB2045CT

20A45V Dynamic Testing

Test Condition:

- $V_{in} = 110V$ 60Hz

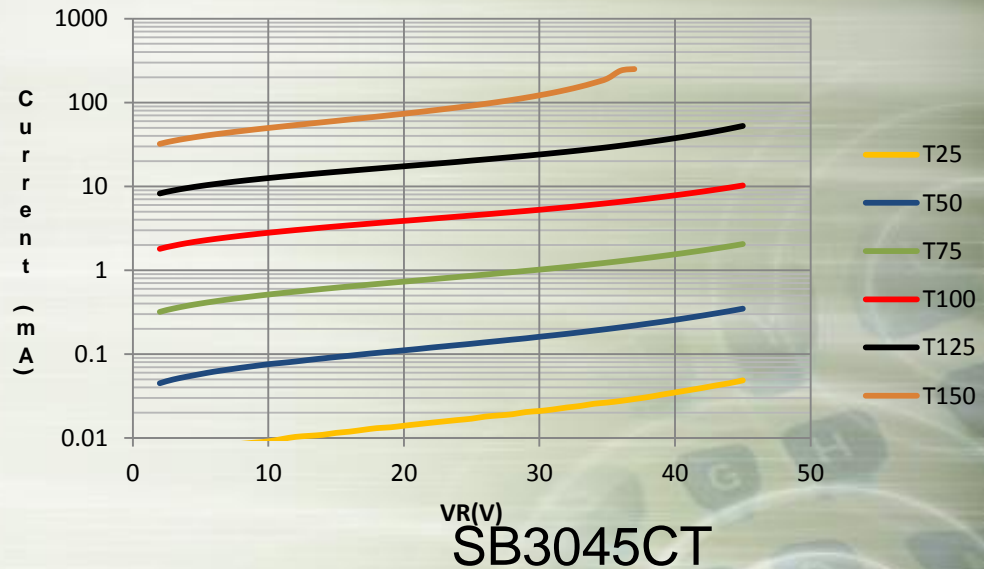
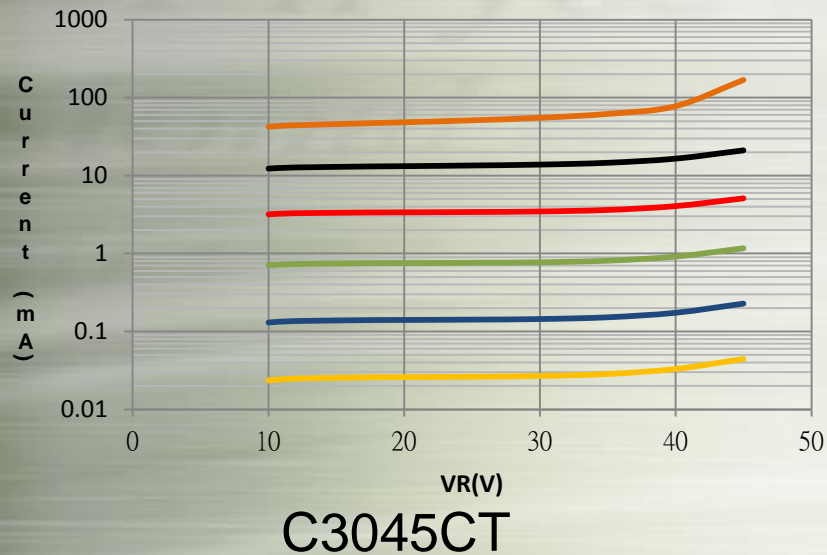
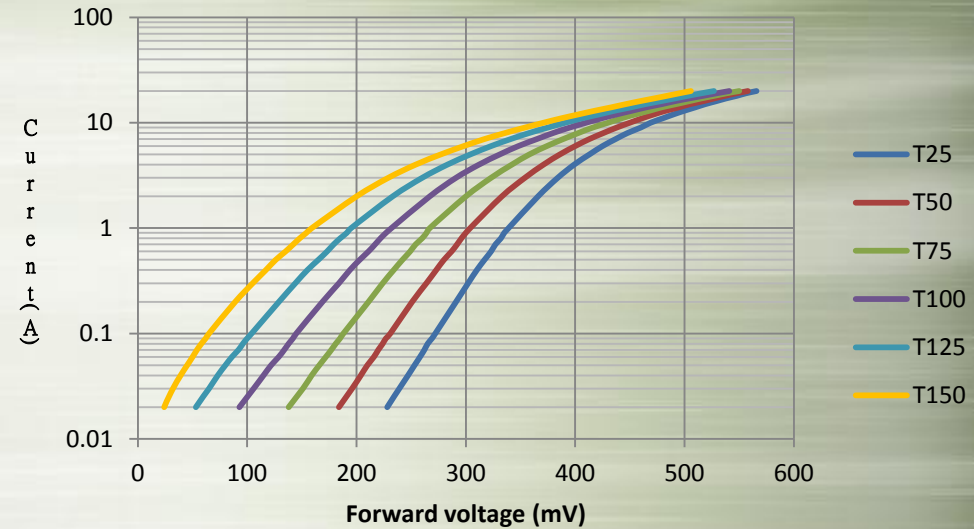
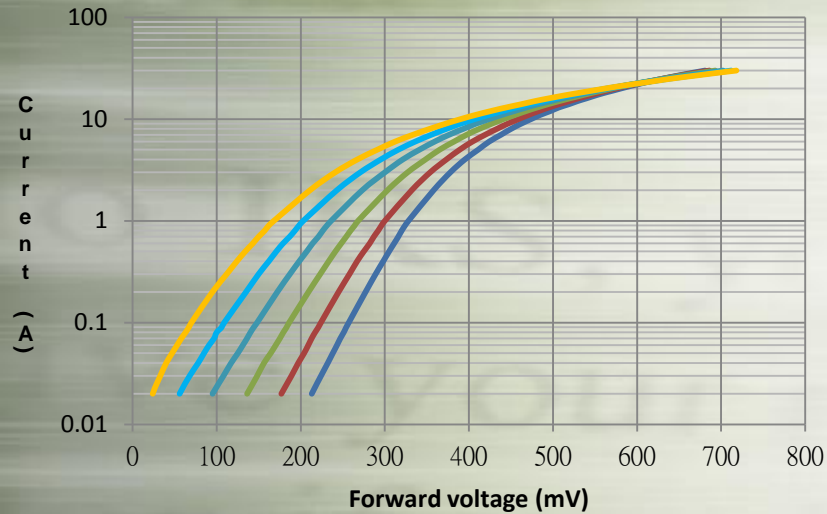
$V_{out} = 5V$ 3A

Part number	V in (V)	I in (A)	P in (W)	PF	I out (A)	P out (W)	Efficiency (%)	Temp. (°C)
SB2045CT	110	0.2	18.65	0.474	3	15.093	80.93%	63.6
C2045CT	110	0.2	18.55	0.471	3	15.087	81.33%	60.3

30A 45V VF & IR(Trench vs Planar)

25C							
Part number	1A	2A	3A	5A	10A	15A	IR@45V
C3045CT	328	358	378	411	474	529	44.2uA
SB3045CT	339	366	384	413	469	519	48.8uA
50C							
Part number	1A	2A	3A	5A	10A	15A	IR@45V
C3045CT	300	332	354	389	459	519	226.7uA
SB3045CT	304	333	354	386	450	505	347.9uA
75C							
Part number	1A	2A	3A	5A	10A	15A	IR@45V
C3045CT	268	303	327	365	441	507	1.16mA
SB3045CT	267	300	323	358	430	492	2.05mA
100C							
Part number	1A	2A	3A	5A	10A	15A	IR@45V
C3045CT	236	273	300	341	424	497	5.10mA
SB3045CT	232	267	291	331	410	479	10.27mA
125C							
Part number	1A	2A	3A	5A	10A	15A	IR@45V
C3045CT	203	243	271	316	407	488	20.99mA
SB3045CT	195	233	260	304	391	464	52.42mA
150C							
Part number	1A	2A	3A	5A	10A	15A	IR@45V
C3045CT	168	211	241	291	390	478	168.2mA
SB3045CT	159	200	229	277	371	446	Over

30A 45V VF/IR Curve



30A45V Dynamic Testing

Test Condition:

V_{in} =110V 60Hz

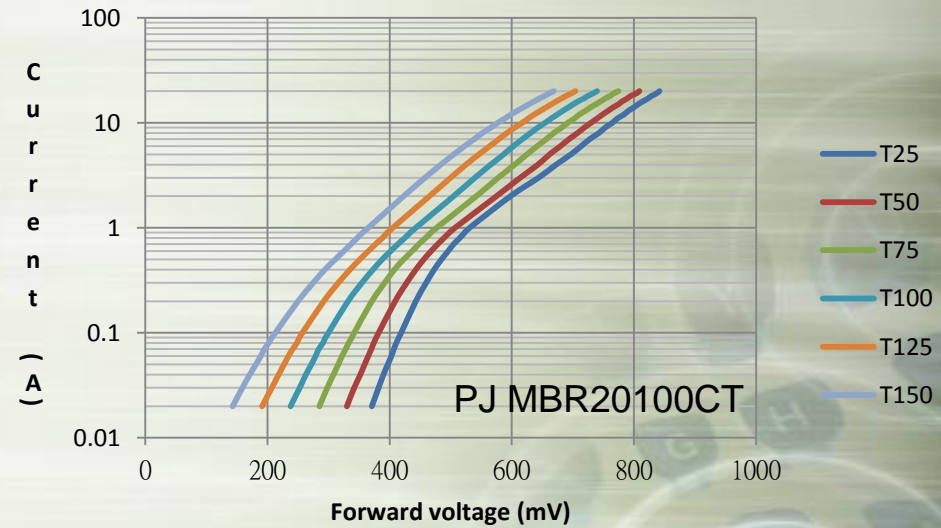
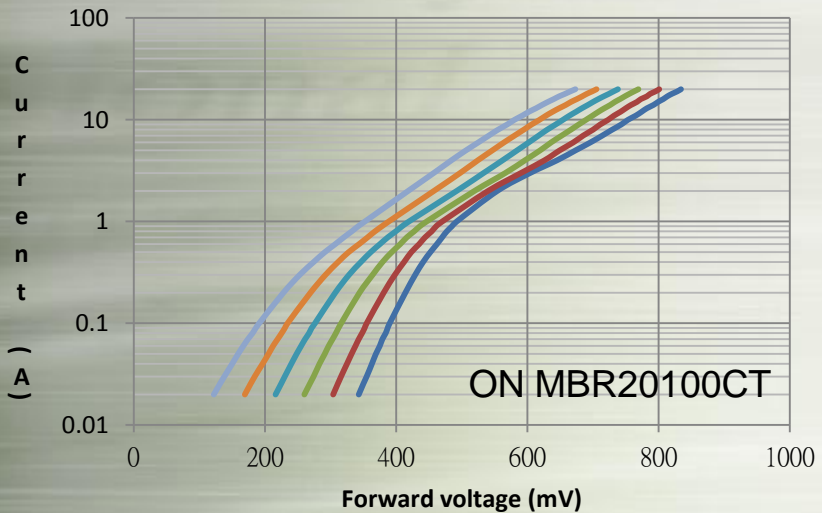
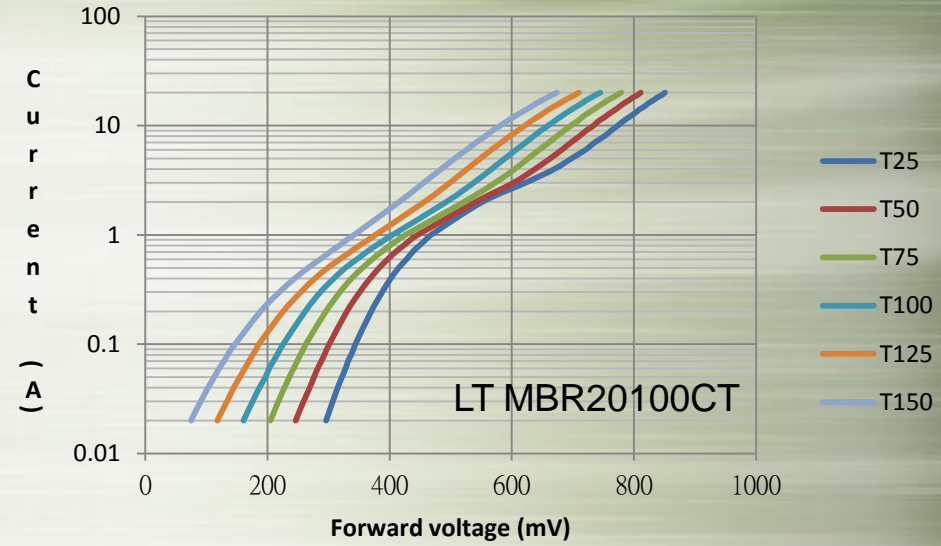
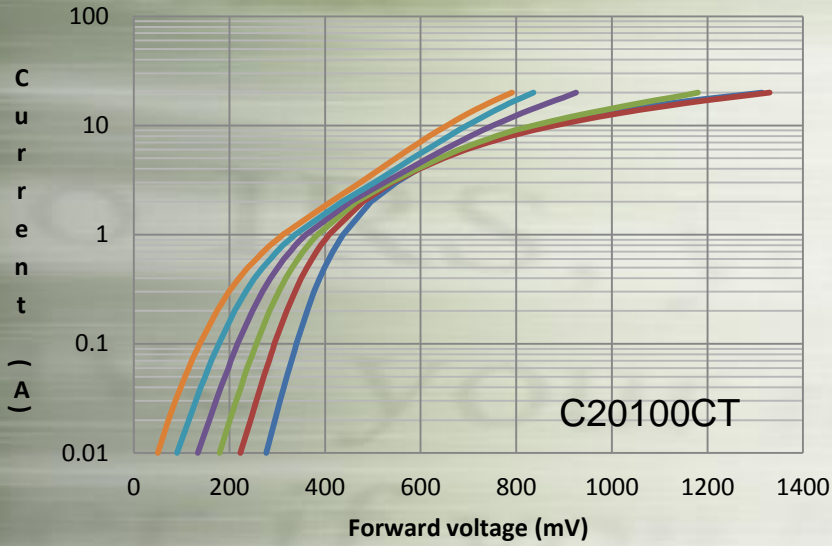
Part number	V in (V)	I in (A)	P in (W)	PF	V out (V)	I out (A)	P out (W)	Efficiency (%)	Temp. (°C)
C3045CT	110	0.2	18.55	0.483	5.0304	3	15.086	81.33%	63.3
SB3045CT	110	0.2	18.55	0.47	5.0231	3	15.065	81.21%	63

Part number	V in (V)	I in (A)	P in (W)	PF	V out (V)	I out (A)	P out (W)	Efficiency (%)	Temp. (°C)
C3045CT	110	0.45	24.81	0.501	4.9457	4	19.778	79.72%	72
SB3045CT	110	0.45	24.88	0.504	4.9745	4	19.793	79.55%	72.6

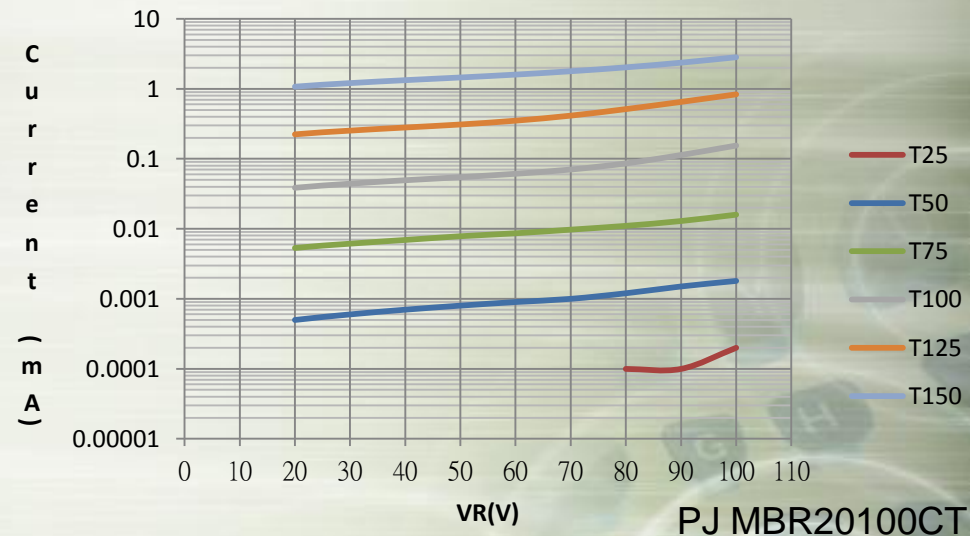
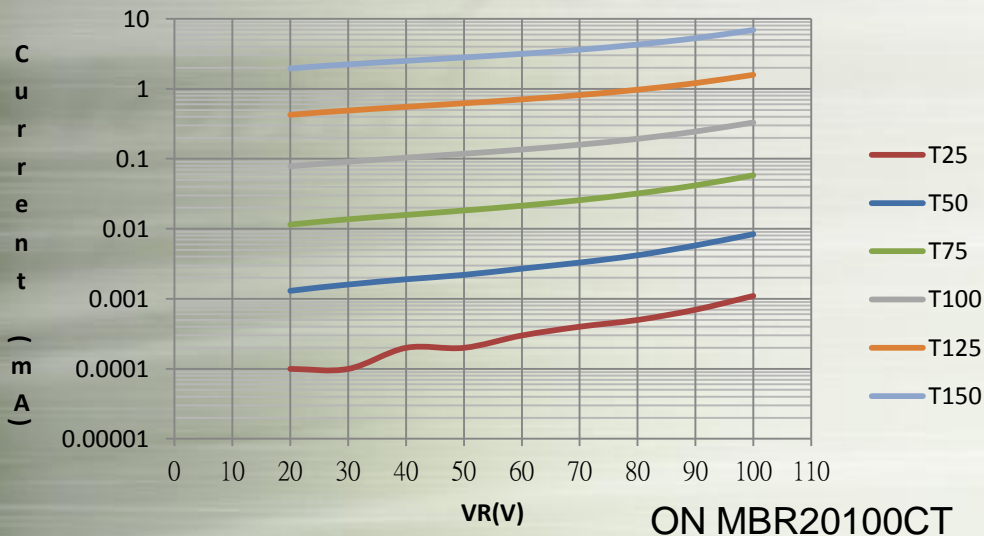
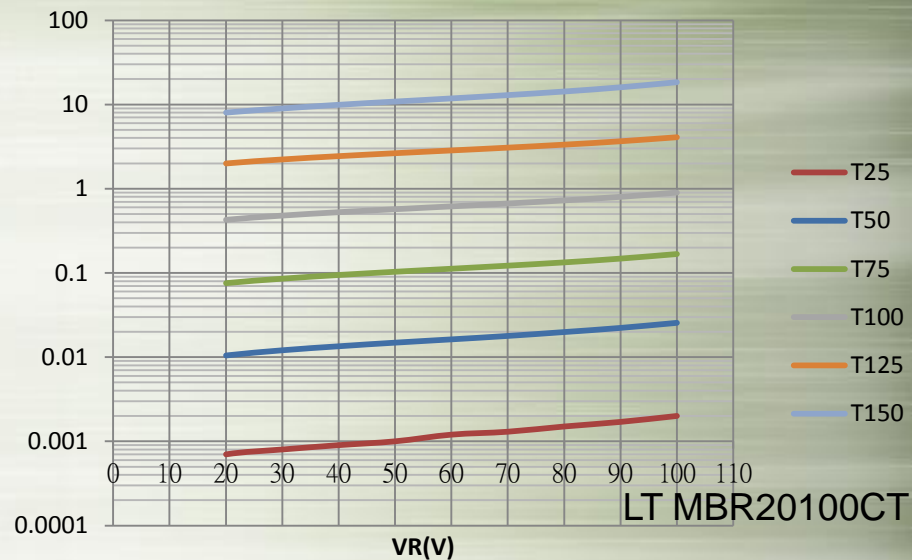
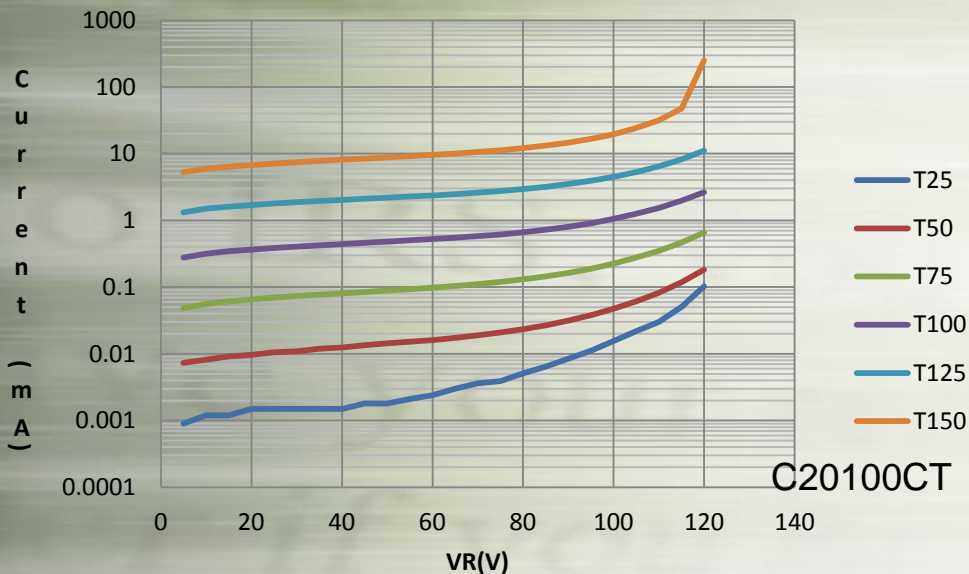
20A100V VF & IR(Trench vs Planar)

25C						
Part number	1A	2A	3A	5A	10A	IR@100V
C20100CT	438	496	549	642	782	15.5uA
LT-MBR20100CT	468	552	623	698	774	2uA
ON-MBR20100CT	492	554	604	673	753	1.1uA
PJ-MBR20100CT	531	598	644	697	765	0.2uA
50C						
Part number	1A	2A	3A	5A	10A	IR@100V
C20100CT	408	479	540	648	765	47.3uA
LT-MBR20100CT	446	541	603	663	734	25.6uA
ON-MBR20100CT	470	540	590	649	723	8.4uA
PJ-MBR20100CT	507	575	614	662	730	1.8uA
75C						
Part number	1A	2A	3A	5A	10A	IR@100V
C20100CT	384	466	536	640	758	225.5uA
LT-MBR20100CT	426	522	573	627	697	168.3uA
ON-MBR20100CT	446	519	566	619	689	58.2uA
PJ-MBR20100CT	477	542	578	625	692	15.9uA
100C						
Part number	1A	2A	3A	5A	10A	IR@100V
C20100CT	360	453	524	616	740	1.05mA
LT-MBR20100CT	405	493	538	589	660	901.2uA
ON-MBR20100CT	419	492	533	584	654	328.9uA
PJ-MBR20100CT	443	505	540	587	655	155.5uA
125C						
Part number	1A	2A	3A	5A	10A	IR@100V
C20100CT	337	436	503	583	697	4.49mA
LT-MBR20100CT	377	457	499	549	622	4.07mA
ON-MBR20100CT	388	457	497	546	618	1.58mA
PJ-MBR20100CT	405	465	500	546	617	835.9uA
150C						
Part number	1A	2A	3A	5A	10A	IR@100V
C20100CT	312	412	474	548	655	19.56mA
LT-MBR20100CT	342	416	456	507	582	18.47mA
ON-MBR20100CT	352	418	457	506	580	6.91mA
PJ-MBR20100CT	365	423	458	505	577	2.83mA

20A100V VF Curve



20A 100V IR Curve



Dynamic Testing

Test Condition:

$V_{in} = 110V$ 60Hz , $V_{out} = 19.5V$

110V 60Hz							
Part number	Load	I in (A)	PF	P in (W)	P out (W)	Efficiency (%)	Temp. (C)
C20100CT	1.5A	0.6A	0.479	32.64	28.678	87.86%	91.2C
LT-MBR20100CT	1.5A	0.6A	0.48	32.7	28.674	87.69%	95C
ON-MBR20100CT	1.5A	0.6A	0.48	32.65	28.676	87.83%	96.5C
PJ-MBR20100CT	1.5A	0.6A	0.48	32.66	28.681	87.82%	94C

110V 60Hz							
Part number	Load	I in (A)	PF	P in (W)	P out (W)	Efficiency (%)	Temp. (C)
C20100CT	2.5A	0.91A	0.537	53.72	47.662	88.72%	83.8C
LT-MBR20100CT	2.5A	0.92A	0.531	53.75	47.535	88.44%	88.6C
ON-MBR20100CT	2.5A	0.92A	0.531	53.75	47.65	88.65%	85.1C

Applications

Power

Power Supply
Adaptor
Charger

Computer

Notebook
Desktop computer
Ultra book
Slim Computer
Motherboard

Communication

ADSL
Set-top Box
Wireless

Consumer

DVD Player
LED TV/Monitor
LCD TV/Monitor
Home Appliance
Audio applications
DC-DC Converter
AC-DC Converter
Electronic Toys



Thank you