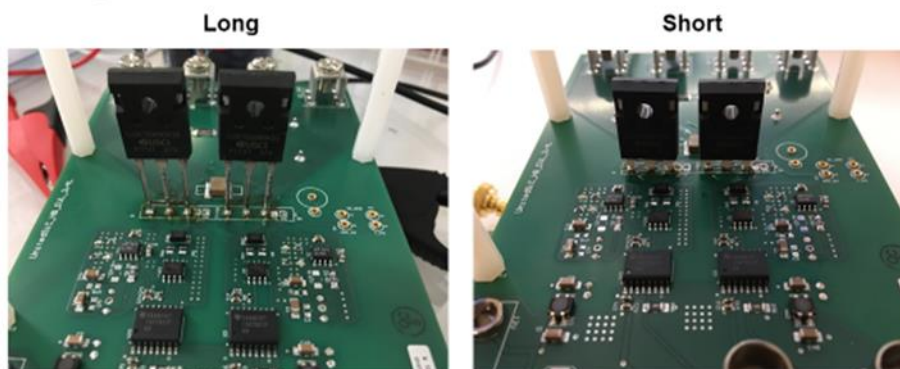


Product Name	Package	Vdsmax	Id (25C)	Id (100C)	Rth(jc) (Typ)	Rds(25C)	Rds(125C)	Rds(175C)	Gate Drive voltage positive rail RGON				Gate Drive voltage negative rail RGOFF		RC snubber	Rsnub	Csnub	Esnub @ 10A	Esnub @ 30A	Coss(ef)	applications. Active rectifier, Totem Pole PFC, Full-bridge etc.			ZVS application s LLC		ZVS application s PSFB									
									10V	12V	15V	20V	0V	-5V							Upto 20kHz	20-100kHz	>100kHz	50-150kHz	150-500kHz	20-50kHz	50-200kHz								
Units		V	A	A	C/W	mΩ	mΩ	mΩ	Ω	Ω	Ω	Ω	Ω	Ω		Ω	pF	μJ	μJ	pF															
UJ3C065080T3S	TO220-3L	650	31	23	0.61	80	110	140	5	10	20	30	5	10	Optional	4.7	220			77	✓			✓		✓									
UJ3C065080K3S	TO247-3L	650	31	23	0.61	80	110	140	5	10	20	30	5	10	Optional	4.7	220				✓			✓		✓									
UJ3C065080B3	D2PAK-3L	650	25	18.2	1	80	110	140	5	10	20	30	5	10	Optional	4.7	220				✓			✓		✓									
UF3C065080T3S	TO220-3L	650	31	23	0.61	80	110	140	5	10	20	30	10	20	Required	4.7	220					✓													
UF3C065080K3S	TO247-3L	650	31	23	0.61	80	110	140	5	10	20	30	10	20	Required	4.7	220					✓													
UF3C065080B3	D2PAK-3L	650	25	18.2	1	80	110	140	5	10	20	30	10	20	Required	4.7	220					✓													
UF3C065080B7S	D2PAK-7L	650	TBD	TBD	TBD	80	110	140	15	20	30	50	5	10	Recommended	10	115					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
UF3C065080K4S	TO247-4L	650	31	23	0.61	80	110	140	15	20	30	50	5	10	Recommended	10	115					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
UF3C065040T3S	TO220-3L	650	54	40	0.35	42	58	78	5	10	20	30	10	20	Required	4.7	330					✓													
UF3C065040K3S	TO247-3L	650	54	40	0.35	42	58	70	5	10	20	30	10	20	Required	4.7	330					✓													
UF3C065040B3	D2PAK-3L	650	41	30	0.65	42	58	70	5	10	20	30	10	20	Required	4.7	330					✓													
UF3SC065040B7S	D2PAK-7L	650	TBD	TBD	TBD	42	58	70	15	20	30	50	5	10	Recommended	10	110					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
UF3SC065040K4S	TO247-4L	650	54	40	0.35	42	58	70	15	20	30	50	5	10	Recommended	10	110					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
UF3SC065040D8	DFN88	650	TBD	TBD	TBD	42	58	70	15	20	30	50	5	10	Recommended	10	110					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
UJ3C065030T3S	TO220-3L	650	85	62	0.26	27	35	43	5	10	20	50	5	10	Optional	4.7	680					✓			✓		✓								
UJ3C065030K3S	TO247-3L	650	85	62	0.26	27	35	43	5	10	20	50	5	10	Optional	4.7	680					✓			✓		✓								
UJ3C065030B3	D2PAK-3L	650	66	47	0.48	27	35	43	5	10	20	50	5	10	Optional	4.7	680					✓			✓		✓								
UF3C065030T3S	TO220-3L	650	85	62	0.26	27	35	43	5	10	20	30	10	20	Required	4.7	680					✓													
UF3C065030K3S	TO247-3L	650	85	62	0.26	27	35	43	5	10	20	30	10	20	Required	4.7	680					✓													
UF3C065030B3	D2PAK-3L	650	66	47	0.48	27	35	43	5	10	20	30	10	20	Required	4.7	680					✓													
UF3SC065030B7S	D2PAK-7L	650	TBD	TBD	TBD	27	35	43	15	20	30	50	5	10	Recommended	10	220					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UF3SC065030K4S	TO247-4L	650	85	62	0.26	27	35	43	15	20	30	50	5	10	Recommended	10	220					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UF3SC065030D8	DFN88	650	TBD	TBD	TBD	27	35	43	15	20	30	50	5	10	Recommended	10	220					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UF3SC065007K4S	TO247-7L	650	TBD	130	0.15	6.7	9.3	11.8	3	4	5	7	3	5	Recommended	10	680					✓			✓		✓								
UJ3C120150K3S	TO247-3L	1200	18.4	13.8	0.7	150	255	330	5	10	20	30	5	10	Optional	4.7	100					✓			✓		✓								
UF3C120150K3S	TO247-3L	1200	18.4	13.8	0.7	150	255	330	5	10	20	30	10	20	Required	4.7	100					✓													
UF3C120150B7S	D2PAK-7L	1200	TBD	TBD	TBD	150	255	330	15	20	30	50	5	10	Recommended	10	47					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UF3C120150K4S	TO247-4L	1200	18.4	13.8	0.7	150	255	330	15	20	30	50	5	10	Recommended	10	47					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UJ3C120080K3S	TO247-3L	1200	33	24	0.45	80	136	172	5	10	20	30	5	10	Optional	4.7	150	5.0	8.0					✓			✓		✓						
UF3C120080K3S	TO247-3L	1200	33	24	0.45	80	136	172	5	10	20	30	10	20	Required	4.7	150					✓													
UF3C120080B7S	D2PAK-7L	1200	TBD	TBD	0.6	80	136	172	15	20	30	50	5	10	Recommended	10	68					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UF3C120080K4S	TO247-4L	1200	33	24	0.45	80	136	172	15	20	30	50	5	10	Recommended	10	68					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UJ3C120040K3S	TO247-3L	1200	65	47	0.27	35	56	73	5	10	20	30	5	10	Optional	4.7	330	14.7	21.6					✓			✓		✓						
UF3C120040K3S	TO247-3L	1200	65	47	0.27	35	56	73	5	10	20	30	10	20	Required	4.7	330	16.1	23.5					✓			✓		✓						
UF3SC120040B7S	D2PAK-7L	1200	TBD	TBD	TBD	35	56	73	15	20	30	50	5	10	Recommended	10	110					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UF3C120040K4S	TO247-4L	1200	65	47	0.27	35	56	73	15	20	30	50	5	10	Recommended	10	110					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
UF3SC120016K3S	TO247-3L	1200	107	77	0.22	16	26	34	5	8	10	15	5	10	Required	10	470					✓			✓		✓								
UF3SC120016K4S	TO247-4L	1200	107	77	0.22	16	26	34	6	8	10	15	5	10	Recommended	10	470					✓			✓		✓								
UF3SC120009K4S	TO247-4L	1200	180	130	0.15	8.6	13.8	18.2	3	4	5	7	3	5	Recommended	10	680					✓			✓		✓								

UF3CXXXXXXK3S MUST HAVE LEADS FULLY INSERTED TO MINIMIZE INDUCTANCE

Long Lead vs Short Lead



Hard Switching HB	LLC application	PSFB application
<ol style="list-style-type: none"> UF3CxxxxxxxK3S with snubber is best solution for 3L applications. UF series in 3 terminal packages must use a snubber for hard switching. UF3CxxxxxxxK4S gives the highest efficiency. Snubber is recommended to reduce voltage overshoots. 	<ol style="list-style-type: none"> UF3CxxxxxxxK3S is not recommended for LLC since it requires snubber which has lower light load Eoff. UJ3C is good if snubber is not available. For higher Rds(on)>80m, UJ3C is good enough. UF3CxxxxxxxK4S has highest efficiency even with snubber. 	<ol style="list-style-type: none"> UF3CxxxxxxxK4S is best for <40m devices. UJ3CxxxxxxxK3S is good for 80mOhm and above.

Snubber Design Guidelines

This SiC FET user guide presents practical solutions and guidelines for using RC snubbers with fast switching SiC devices. The solution is verified by experimental double pulse tests (DPT) results. The snubber loss is precisely measured to assist users in computing the power rating of the snubber resistor. The beneficial impact of the snubber is analyzed for both hard switching and soft switching applications. An application note entitled "Switching fast SiC FETs with a snubber" complements this user guide and can be found at https://unitedsic.com/wp-content/uploads/appnotes/Snubber%20AppNotes_V8.pdf.

Basic assumptions:

1. Rgon: minimize Qrr to reduce Eon.
2. Rgoff: Small value gives better VGS waveform. UF3S needs higher Rgoff to avoid oscillation. 0 is possible.
3. Cascode Rg has big impact on turn on didt while limited effect on dvdt.
4. dvdt is affected by snubber.

Guidelines:

Snubber Rule	UF3CxxxxyyK3S	UF3CxxxxyyK4S
Cs (>80m Rdson)	3xCoss(er)	2xCoss(er)
Cs (<30m Rdson)		Coss(er)
Rs (Ω)	5	10

Note: UJ3C show that having snubber Cs can reduce Eoff for soft switching, especially for PSFB.

BOM:

Cs (pF)	Series	Part Number	Package	Rated V
47	COG	202R18N470JV4E	1206	2000V
68		C1206C680JGGAC7800	1206	
100		202R18N101JV4E	1206	
150		C1206C151JGGAC7800	1206	
220		C1206C221JGGAC7800	1206	
330		C1210C331JGGACTU	1210	
680		C1808C681JGGAC7800	1808	

Note: "COG" ceramic capacitors are most stable.

Rs (Ω)	Power Rating (W)	Part Number	Package
4.7	0.25	KTR18EZPF4R70	1206
	0.5	SR1206FR-7W4R7L	1206
	1	CRCW20104R70JNEFHP	2010
	1.5	CRCW25124R70JNEGHP	2512
10	0.25	KTR18EZPF10R0	1206
	0.5	SR1206FR-7W10RL	1206
	1	CRCW201010R0JNEFHP	2010
	1.5	CRCW251210R0JNEGHP	2512

Notes:

1. For "KTR18" resistor is rated at 500V and the overload voltage is 1000V.
2. For "SR1206" resistor is rated at 200V, the overload voltage is 400V, the dielectric withstanding voltage is 500V.