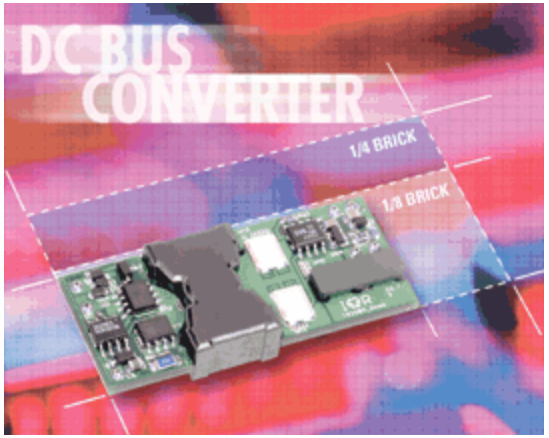
myPower online Design Center

Featuring the IR2085/6 Bus Converter



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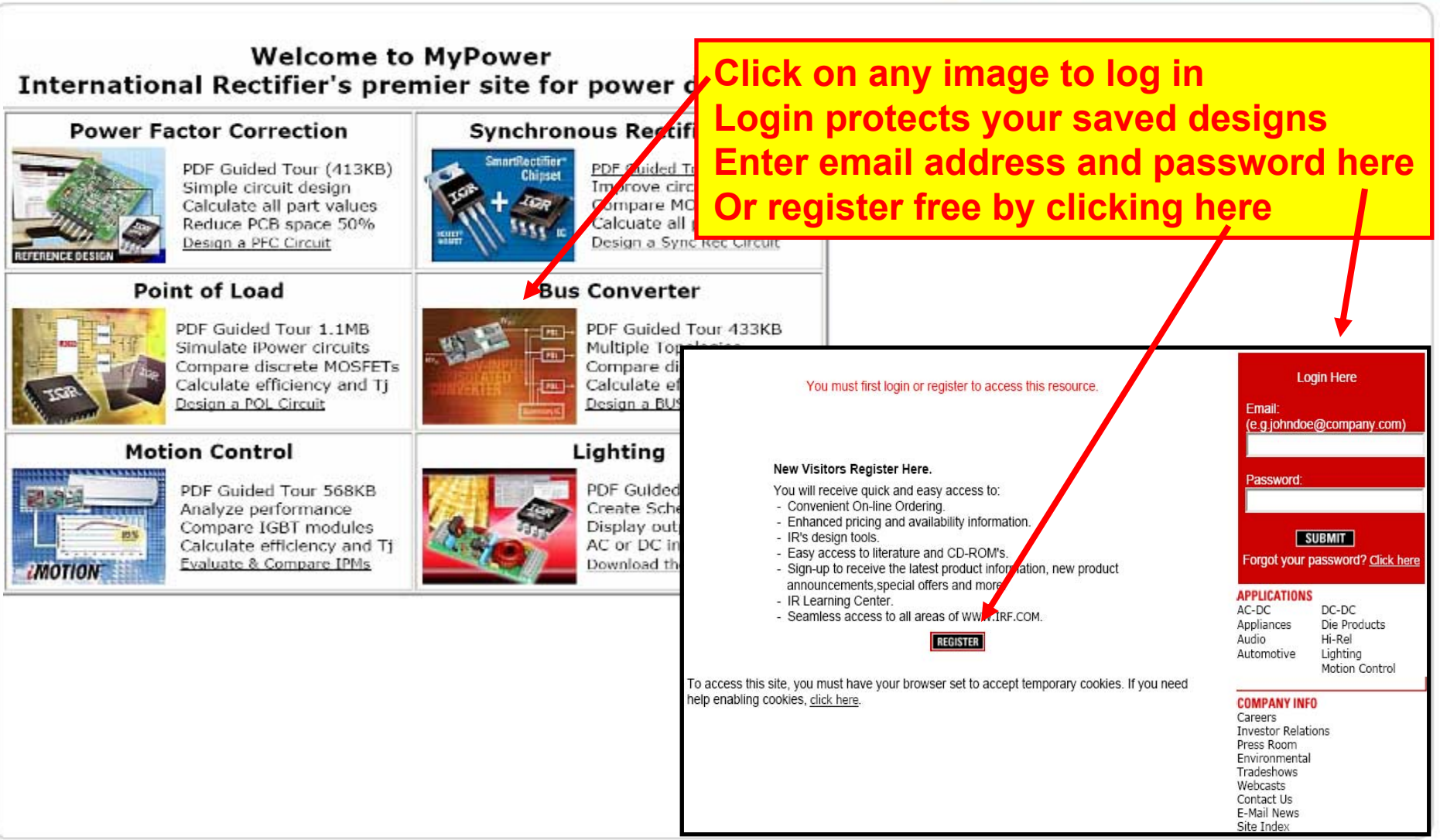


Bus Converters

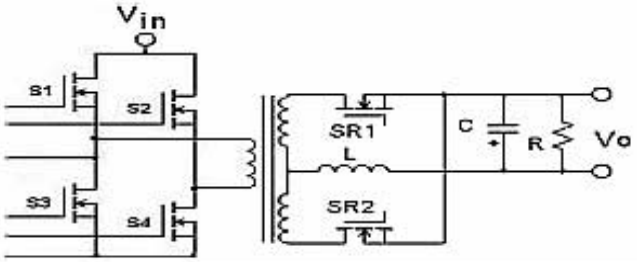
Calculated MOSFET power losses & junction temperatures & efficiency!

MOSFET selection tools for Bus Converter circuits

These tools are used to evaluate and compare primary and secondary FET pairings in half-bridge, full bridge and forward converters. You will be able to simplify your search by sorting results.

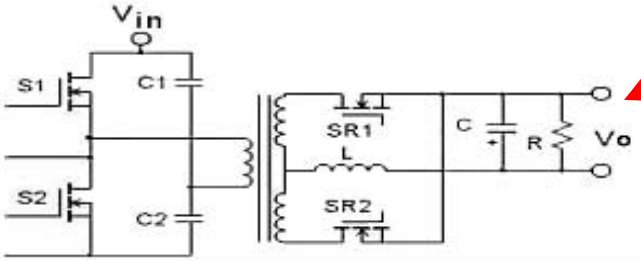
Full Bridge

Highest power conversion
Isolated Output
Low output ripple current
Wide 36-72 VDC input range
Up to 40 amps load current



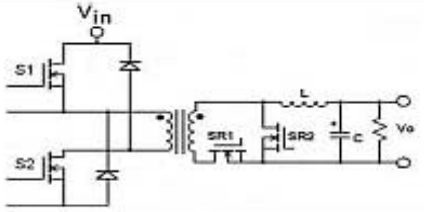
Half Bridge

Medium power conversion
Isolated Output
Low output ripple current
Low parts count
Wide 36-72 VDC input range
Up to 30 amps load current



Forward Converter

Simple design
Isolated Output
Low parts count
Wide 36-72 VDC input range
Up to 30 amps load current



Design Tools available for Full Bridge, Half Bridge & Forward DC-DC Bus converters

IR2085 & IR2086

POWER TO LEAD

Enter Operating Conditions:

Below is a reference bus converter circuit diagram and corresponding input fields.

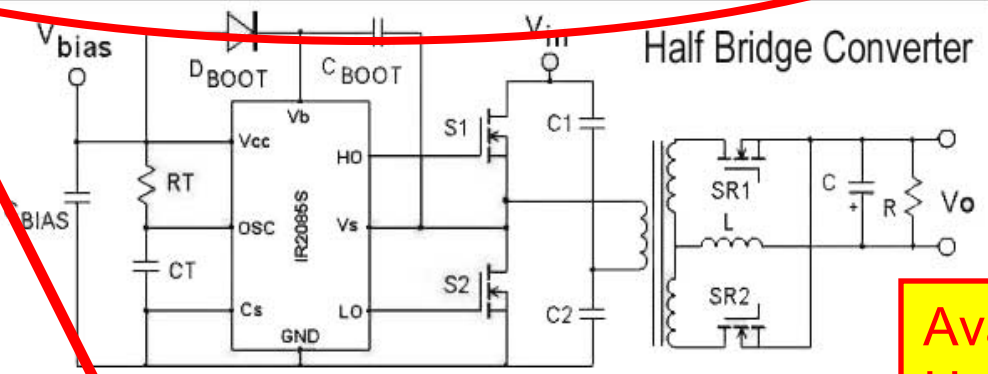
Set the input fields to match your application needs, then click the GO button.

We will list sets of HEXFET Power MOSFETs that best meet your needs, including highly accurate calculations of circuit efficiency, device power loss and junction temperature, as well as links to detailed device information.

Step 1: Enter Operating Conditions

V in: ○ 36-72 V ● 42-56 V	FET gate drive voltage: 12 V	Inductor: 1 uH	Ambient temp: 45 oC
V out: 8 V	FET gate drive current: 0.5 A	Inductor ESR: 5 mOhm	Max PCB temp: 105 oC
I out max: 20 A	Switching Frequency: 220 kHz	Output Cap: 100 uF	Rth PWB to ambient: 20 K/W
	PCB Trace Resistance: 1 mOhm	Capacitor ESR: 10 mOhm	Rth heatsink to ambient: 200 K/W
			Rth case to heatsink: 4 K/W

Step 2: See Recommendations GO



Other Options

RESET | MOSFET DATA | LIST | SAVE DESIGN | FAQ | USER GUIDE

Enter operating conditions here

Click mouse here to see recommendations

Available for Full Bridge, Half Bridge, Forward and Sync-Buck converters

Bus Converter

View Recommendations

We have found **3** sets of IR HEXFET Power MOSFETs that meet your needs.

Click on any IR part number to view data sheets, spice files, packaging information or availability. Use the arrows to sort on any parameter. Click on the power loss to see a detailed evaluation of an individual set. To order parts to start your prototype, use the 'Buy' button to add that pair to your shopping cart.

		IR P/N	B_{Vdss}	I_D @25°C	Power Loss	T_J (°C)	Efficiency	Package	Price*
DETAILS	S1	IRF6668	80 V	55 A	1.49 W	104	95.4 %	DirectFET	1.34
	S2	IRF6668	80 V	55 A	1.49 W	104		DirectFET	1.34
	SR1	IRF6618	30 V	150 A	1.21 W	103		DirectFET	1.98
	SR2	IRF6618	30 V	150 A	1.21 W	103		DirectFET	1.98
DETAILS	S1	IRF6668	80 V	55 A	1.49 W	104	95.3 %	DirectFET	1.34
	S2	IRF6668	80 V	55 A	1.49 W	104		DirectFET	1.34
	SR1	IRF6635	30 V	180 A	1.24 W	104		DirectFET	2.08
	SR2	IRF6635	30 V	180 A	1.24 W	104		DirectFET	2.08
DETAILS	S1	IRF6668	80 V	55 A	1.50 W	106	95.2 %	DirectFET	1.34
	S2	IRF6668	80 V	55 A	1.50 W	106		DirectFET	1.34
	SR1	IRF6619	20 V	150 A	1.30 W	105		DirectFET	1.62
	SR2	IRF6619	20 V	150 A	1.30 W	105		DirectFET	1.62

*note on **pricing**:
The price shown is in $US, per FET, based on MSRP in 1K quantities.

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Here are the Operating Conditions you provided, for reference:

V in:	42-56 V	FET gate drive voltage:	12 V	Inductor:	1 uH	Ambient temp:	45 oC
V out:	8 V	FET gate drive current:	0.5 A	Inductor ESR:	5 mOhm	Max PCB temp:	105 oC
I out max:	26 A	Switching Frequency:	220 kHz	Output Cap:	100 uF	Rth PWB to ambient:	20 K/W
		PCB Trace Resistance:	1 mOhm	Capacitor ESR:	10 mOhm	Rth heatsink to ambient:	200 K/W
						Rth case to heatsink:	4 K/W

Results can be sorted by rated voltage, rated current, power loss, junction temperature, efficiency, package or price!

Details of power losses can be found by clicking here

Bus Converter Details

HALF BRIDGE CONVERTER
PART SET DETAIL

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VIEW INPUT | PDF

Summary: Total Power Losses HELP

Component	Loss (W)	% of Total Power Loss
Control IC & Qg losses	0.232	2.29
Input Caps	0.368	3.64
Input Inductor	0.037	0.36
Output Caps	0.000	0.00
Output Inductors	3.380	33.44
Board Trace Impedance Loss	0.676	6.69
Primary FET Losses	2.986	29.54
SR FET Losses	2.430	24.04
Total Power Loss	10.109	100.00

Detailed: FET Power Losses Per Device

Component	Loss (W)	% of Total Power Loss
Primary FET: IRF6668		
Conduction Loss*	0.543	5.37
Qg Gate Charge Losses	0.058	0.57
Switching Loss*	0.860	8.51
Output Loss*	0.032	0.31
SR FET: IRF6618		
Conduction Loss	0.590	5.84
Qg Gate Charge Losses	0.114	1.12
Reverse Rec. Loss*	0.081	0.80
Deadtime Loss	0.406	4.01
Output Loss*	0.025	0.24

* Loss is dissipated in Primary FET

FET Parameters (typ)	IRF6668	IRF6618
BVdss	80 V	30 V
ID@ 25 °C	55 A	150 A
Vgs	12 V	12 V
RDSon @ Vgs	11.0 mOhm	1.4 mOhm
Qg	22 nC	43 nC
Qgs2	2 nC	4 nC
Qgd	7.8 nC	15.0 nC
Qoss	12.0 nC	28 nC
Qrr	40 nC	46 nC
Body Diode Vf @ 25°C	1.30 V	0.78 V
Package	DirectFET	DirectFET
Price**	$1.34	$1.98

Summary: Other Key Parameters

Total Circuit Efficiency	95.37 %
Primary FET Tj	104 °C
SR FET Tj	103 °C
IR2085 Tj	53 °C
PCB Temp	103 °C
Heatsink Temp	103 °C
P-P Inductor Ripple Current	0.7 A
P-P Output Voltage Ripple	7 mV

note on **pricing:
The price shown is in $US, per FET, based on MSRP in 1K quantities.

- MOSFET parameters
- Losses in passives
- Circuit Efficiency
- Junction temperatures
- FET switching losses
- FET conduction losses