





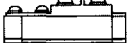

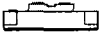

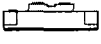



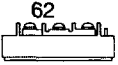
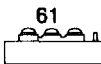
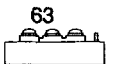
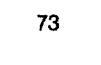
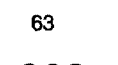
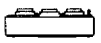


# IGBT modules

Type	$V_{CES}$	$I_C$	$I_{CRM}$	$V_{CESat}$	$t_{on}$	$t_s$	$t_f$	$R_{thJC}$ DC per arm	$t_{vj\ max}$	Outline
	V	A	A	V	$t_p = 1\ ms$ $t_{vj} = 25^\circ C, typ.$ $\mu s$	$t_{vj} = 25^\circ C, typ.$ $\mu s$	$t_{vj} = 25^\circ C, typ.$ $\mu s$	$^\circ C/W$	$^\circ C$	
<b>Dual modules</b>										
FF 15 R 12 KF	1200	15	30	3	0.4	0.5	0.2	1	150	61
FF 25 R 06 KF2	600	25	50	2.7	0.4	0.4	0.15	1	150	
FF 25 R 12 KF	1200	25	50	3	0.4	0.5	0.2	0.5	150	
FF 25 R 12 KF2	1200	25	50	3	0.4	0.5	0.2	0.5	150	
▲ FF 30 R 17 KF	1700	30	60	3.2	0.5	0.4	0.6	0.25	150	
FF 50 R 06 KF2	600	50	100	2.7	0.4	0.4	0.15	0.5	150	
▲ FF 50 R 06 KF3	600	50	100	2.1	0.4	0.35	0.15	0.45	150	
FF 50 R 12 KF	1200	50	100	3	0.4	0.5	0.2	0.31	150	
FF 50 R 12 KF2	1200	50	100	3	0.4	0.5	0.2	0.31	150	
FF 75 R 06 KF2	600	75	150	2.7	0.4	0.4	0.15	0.35	150	61
▲ FF 75 R 06 KF3	600	75	150	2.1	0.4	0.35	0.15	0.32	150	61
FF 75 R 12 KF	1200	75	150	3	0.4	0.5	0.2	0.2	150	62
FF 75 R 12 KF2	1200	75	150	3	0.4	0.5	0.2	0.22	150	61
▲ FF 90 R 17 KF	1700	90	180	3.2	0.5	0.4	0.6	0.11	150	63
FF 100 R 06 KF2	600	100	200	2.7	0.4	0.4	0.15	0.31	150	61
▲ FF 100 R 06 KF3	600	200	200	2.1	0.4	0.35	0.15	0.28	150	61
FF 100 R 12 KF	1200	100	200	3	0.4	0.6	0.2	0.15	150	63
FF 100 R 12 KF2	1200	100	200	3	0.4	0.6	0.2	0.19	150	63
FF 150 R 06 KF2	600	150	300	2.7	0.4	0.4	0.15	0.18	150	73
▲ FF 150 R 06 KF3	700	150	300	2.1	0.4	0.35	0.15	0.16	150	73
FF 150 R 12 KF	1200	150	300	3	0.4	0.6	0.2	0.11	150	63
FF 150 R 12 KF2	1200	150	300	3	0.4	0.6	0.2	0.11	150	63
▲ FF 180 R 17 KF	1700	180	360	3.2	0.5	0.4	0.6	0.069	150	76
FF 200 R 06 KF2	600	200	400	2.7	0.4	0.4	0.15	0.16	150	73
▲ FF 200 R 06 KF3	600	200	400	2.1	0.4	0.35	0.15	0.14	150	73
FF 200 R 12 KF	1200	200	400	3	0.4	0.6	0.2	0.088	150	63
FF 200 R 12 KF 2	1200	200	400	3	0.4	0.6	0.2	0.096	150	63
FF 300 R 06 KF2	600	300	600	2.7	0.4	0.4	0.15	0.1	150	63
▲ FF 300 R 06 KF3	600	300	600	2.1	0.4	0.35	0.15	0.09	150	63
FF 300 R 12 KF2	1200	300	600	3	0.4	0.6	0.2	0.069	150	76
FF 400 R 06 KF2	600	400	800	2.7	0.4	0.4	0.15	0.069	150	76
▲ FF 400 R 06 KF3	600	400	800	2.1	0.4	0.35	0.15	0.069	150	76
▲ FF 400 R 12 KF1	1200	400	800	3	0.7	0.9	0.25	0.04	150	77
▲ FF 400 R 16 KF1	1600	400	800	3.5	1.1	1.1	0.25	0.04	150	77
▲ FF 600 R 12 KF1	1200	600	1200	3	0.7	0.9	0.25	0.032	150	77
▲ FF 600 R 16 KF1	1600	600	1200	3.5	1.1	1.1	0.25	0.032	150	

Most types of the power module have been **UL**-recognized

▲ New type

# IGBT modules

Type	$V_{CES}$	$I_C$	$I_{CRM}$	$V_{CESat}$	$t_{on}$	$t_s$	$t_r$	$R_{thJC}$ DC per arm	$t_{vj,max}$	Outline	
	V	A	A	V	$t_{tr} =$ 1 ms	$t_{vj} =$ 25 °C, typ.	$t_{vj} =$ 25 °C, typ.	$t_{vj} =$ 25 °C, typ.	$t_{vj} =$ 25 °C, typ.	°C/W	°C
<b>Single modules</b>											
FZ 200 R 12 KF	1200	200	400	3	0.4	0.6	0.2	0.088	150	65	
FZ 200 R 12 KF2	1200	200	400	3	0.4	0.6	0.2	0.089	150		
▲ FZ 240 R 17 KF	1700	240	480	3.2	0.5	0.4	0.6	0.052	150		
FZ 300 R 12 KF	1200	300	600	3	0.4	0.6	0.2	0.062	150		
FZ 300 R 12 KF2	1200	300	600	3	0.4	0.6	0.2	0.063	150		
▲ FZ 360 R 17 KF	1700	360	720	3.2	0.5	0.4	0.6	0.035	150	78	
FZ 400 R 06 KF2	600	400	800	2.7	0.4	0.4	0.15	0.089	150	65	
▲ FZ 400 R 06 KF3	600	400	800	2	0.4	0.35	0.15	0.074	150		
FZ 400 R 12 KF	1200	400	800	3	0.4	0.6	0.2	0.052	150		
FZ 400 R 12 KF2	1200	400	800	3	0.4	0.6	0.2	0.052	150		
FZ 500 R 12 KF	1200	500	1000	3	0.4	0.6	0.2	0.042	150		
▲ FZ 600 R 06 KF3	600	600	1200	2.1	—	0.35	0.15	0.057	150	78	
FZ 600 R 12 KF2	1200	600	1200	3	0.4	0.6	0.2	0.035	150		
▲ FZ 800 R 06 KF3	600	800	1600	2.1	—	0.35	0.15	0.045	150	78	
FZ 800 R 12 KF1	1200	800	1600	3	0.7	0.9	0.25	0.020	150	75	
▲ FZ 800 R 16 KF1	1600	800	1600	3.5	1.1	1.1	0.25	0.020	150	75	
FZ 1200 R 12 KF1	1200	1200	2400	3	0.7	0.9	0.25	0.016	150	75	
▲ FZ 1200 R 16 KF1	1600	1200	2400	3.5	1.1	1.1	0.25	0.016	150		
<b>Dual and single modules with low <math>V_{CESat}</math></b>											
FF 25 R 12 KL	1200	25	50	2.2	0.4	0.5	0.3	0.5	150	61	
FF 50 R 06 KL2	600	50	100	2	0.4	0.5	0.3	0.5	150		
FF 50 R 12 KL	1200	50	100	2.2	0.4	0.5	0.3	0.31	150		
FF 75 R 06 KL2	600	75	150	2	0.4	0.5	0.3	0.35	150	61	
FF 75 R 12 KL	1200	75	150	2.2	0.4	0.5	0.3	0.2	150	62	
FF 100 R 06 KL	600	100	200	2	0.4	0.5	0.3	0.31	150	61	
FF 100 R 12 KL	1200	100	200	2.2	0.4	0.6	0.3	0.15	150	63	
FF 150 R 06 KL2	600	150	300	2	0.4	0.5	0.3	0.18	150	73	
FF 150 R 12 KL	1200	150	300	2.2	0.4	0.7	0.3	0.11	150	63	
FF 200 R 06 KL2	600	200	400	2	0.4	0.5	0.3	0.16	150	73	
FF 200 R 12 KL	1200	200	400	2.2	0.4	0.7	0.3	0.088	150	63	
FF 300 R 06 KL2	600	300	600	2	0.4	0.5	0.3	0.1	150	63	



Most types of the power module have been **UL**-recognized.

▲ New type


# IGBT modules

Type	$V_{CES}$	$I_C$	$I_{CRM}$	$V_{CEsat}$	$t_{on}$	$t_s$	$t_f$	$R_{thJC}$	$t_{vj,max}$	Outline
	V	A	A	V	$t_p = 1\text{ ms}$	$t_{vj} = 25^\circ\text{C, typ.}$	$t_{vj} = 25^\circ\text{C, typ.}$	DC per arm	$^\circ\text{C}$	
					$\mu\text{s}$	$\mu\text{s}$	$\mu\text{s}$	$^\circ\text{C/W}$	$^\circ\text{C}$	

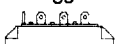
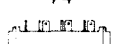
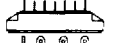
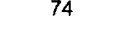


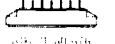
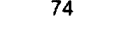

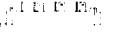
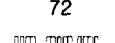
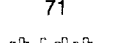


## Dual and single modules with low $V_{CEsat}$

FF 400 R 06 KL2	600	400	800	2	0.4	0.5	0.3	0.069	150	76	
FZ 300 R 06 KL	600	300	600	2.2	0.4	0.5	0.3	0.1	150	65	
FZ 300 R 12 KL	1200	300	600	2.2	0.4	0.8	0.3	0.062	150		
FZ 400 R 06 KL2	600	400	800	2	0.4	0.5	0.3	0.089	150		
FZ 400 R 12 KL	1200	400	800	2.2	0.4	0.8	0.3	0.052	150		
FZ 500 R 12 KL	1200	500	1000	2.2	0.4	0.8	0.3	0.042	150		

## Chopper modules

DF 100 R 12 KF-A	1200	100	200	3	0.4	0.6	0.2	0.15	150	68	
DF 150 R 12 KF-A	1200	150	300	3	0.4	0.6	0.2	0.11	150		
FD 150 R 12 KF-K	1200	150	300	3	0.4	0.6	0.2	0.11	150		
FD 200 R 12 KF-K	1200	200	400	3	0.4	0.6	0.2	0.088	150		
DF 200 R 12 KL-A	1200	200	400	2.2	0.4	0.7	0.3	0.088	150		
FD 200 R 12 KL-K	1200	200	400	2.2	0.4	0.7	0.3	0.088	150		

## Six pack modules

FS 8 R 12 KF	1200	8	16	3	0.4	0.4	0.2	1.56	150	69		
FS 8 R 12 KF2	1200	8	16	3	0.4	0.4	0.2	1.56	150	74		
FS 15 R 06 KF2	600	15	30	2.7	0.4	0.4	0.15	1.56	150	66		
FS 15 R 12 KF	1200	15	30	3	0.4	0.5	0.2	1	150	69		
FS 15 R 12 KF2	1200	15	30	3	0.4	0.5	0.2	1	150	74		
FS 25 R 06 KF2	600	25	50	2.7	0.4	0.4	0.15	1.25	150	70 (1)		
FS 25 R 12 KF	1200	25	50	3	0.4	0.5	0.2	0.625	150	71		
FS 25 R 12 KF2	1200	25	50	3	0.4	0.5	0.2	0.83	150	74		
FS 50 R 06 KF2	600	50	100	2.7	0.4	0.4	0.15	0.5	150	72		
▲ FS 50 R 06 KF3	600	50	100	2.1	0.4	0.35	0.15	0.45	150	72		
FS 50 R 12 KF	1200	50	100	3	0.4	0.5	0.2	0.41	150	71		
FS 50 R 12 KF2	1200	50	100	3	0.4	0.5	0.2	0.5	150	71		

Most types of the power module have been **UL**-recognized.

▲ New type

# IGBT modules

Type	$V_{CES}$	$I_C$	$I_{CRM}$	$V_{CESat}$	$t_{on}$	$t_s$	$t_f$	$R_{thJC}$ DC per arm	$t_{vj\ max}$	Outline	
	V	A	A	V	$t_p = 1\ ms$	$t_{vj} = 25\ ^\circ C, typ.$	$t_{vj} = 25\ ^\circ C, typ.$	$t_{vj} = 25\ ^\circ C, typ.$	$t_{vj} = 25\ ^\circ C, typ.$	$^\circ C/W$	$^\circ C$

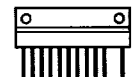
## Six pack modules

FS 75 R 06 KF2	600	75	150	2.7	0.4	0.4	0.15	0.35	150	72
▲ FS 75 R 06 KF3	600	75	150	2.1	0.4	0.35	0.15	0.32	150	
FS 100 R 06 KF2	600	100	200	2.7	0.4	0.4	0.15	0.31	150	
▲ FS 100 R 06 KF3	600	100	200	2.1	0.4	0.35	0.15	0.28	150	



## Six pack modules (Single in line)

FS 15 R 06 KFS	600	15	30	3	0.4	0.4	0.15	2.27	150	79
FS 20 R 06 KFS	600	20	40	3	0.4	0.4	0.15	2.08	150	
FS 15 R 06 KLS	600	15	30	2.2	0.4	0.4	0.3	2.27	150	
FS 20 R 06 KLS	600	20	40	2.2	0.4	0.4	0.3	2.08	150	



## Single pack modules ISOTOP

FZ 25 A 06 KL	600	25	50	2.3	0.4	0.4	0.3	1	150	82
FZ 25 A 12 KL	1200	25	50	2.2	0.4	0.5	0.3	0.83	150	81
FZ 25 A 12 KF	1200	25	50	3	0.4	0.5	0.2	0.83	150	
FZ 50 A 06 KL	600	50	100	2.3	0.4	0.4	0.3	0.83	150	82
FZ 50 A 12 KL	1200	50	100	2.2	0.4	0.5	0.3	0.41	150	81
FZ 50 A 12 KF	1200	50	100	3	0.4	0.5	0.2	0.41	150	
FZ 75 A 06 KL	600	75	150	2.3	0.4	0.4	0.3	0.625	150	82
FZ 75 A 12 KL	1200	75	150	2.2	0.4	0.5	0.3	0.41	150	81
FZ 100 A 06 KL	600	100	200	2.3	0.4	0.4	0.3	0.41	150	82



Most types of the power module have been **UL**-recognized.

▲ New type