

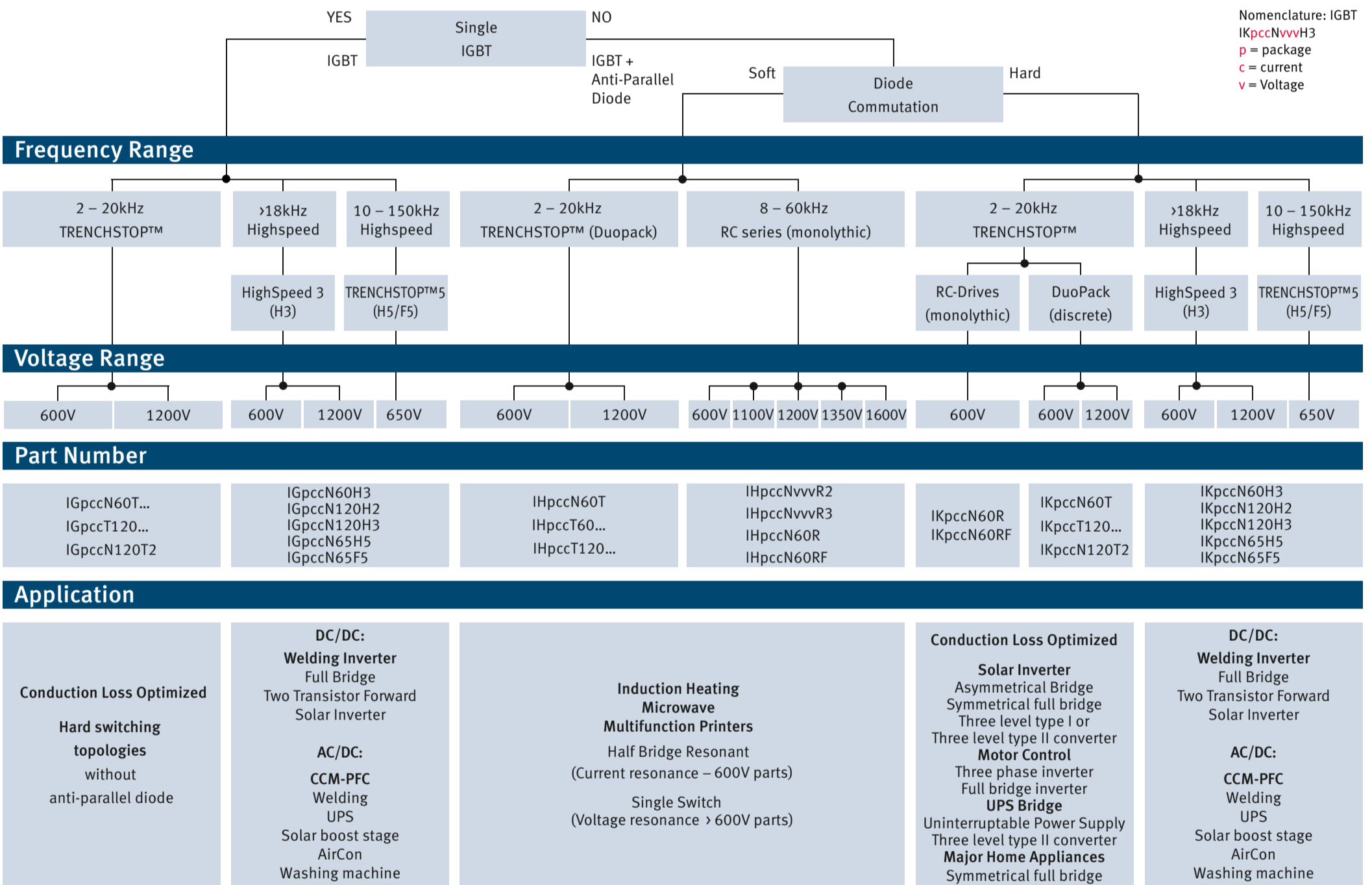


# IGBT Selection Guide

## Common IGBT Applications and Topologies

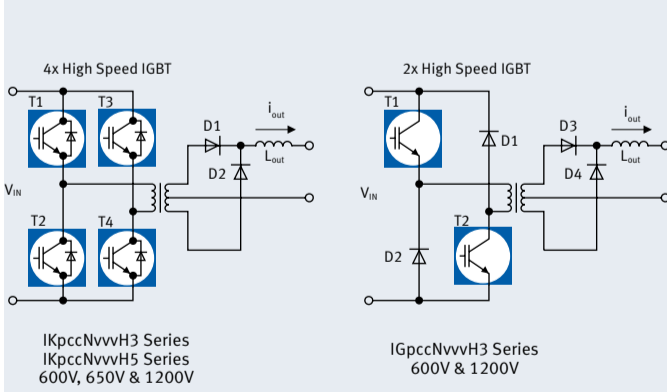
Date: 07/2013

### IGBT Selection Tree

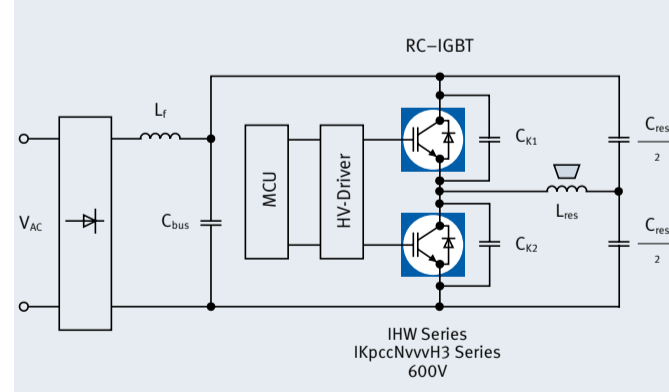


### Common IGBT Applications and Topologies

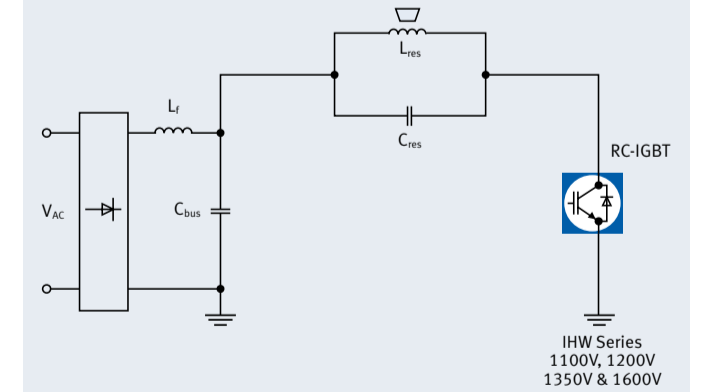
Full Bridge / Two Transistor Forward: Welding Inverter



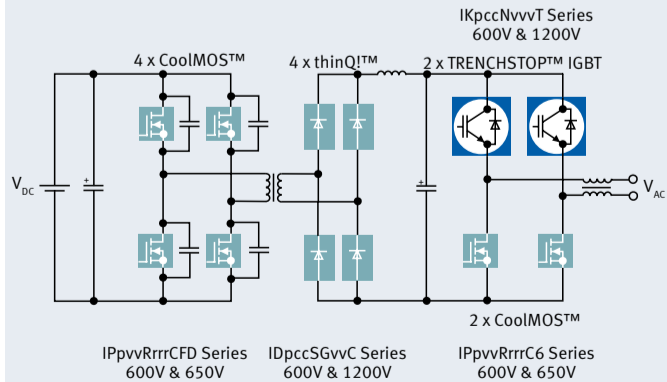
Half Bridge: Induction Heating Inverter (Current Resonance)



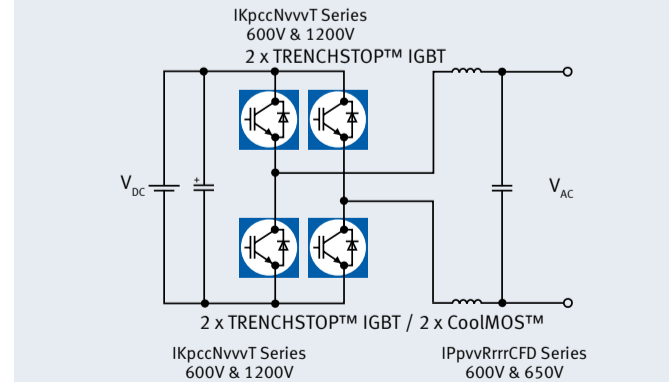
Single switch: Induction Heating Inverter (Voltage Resonance)



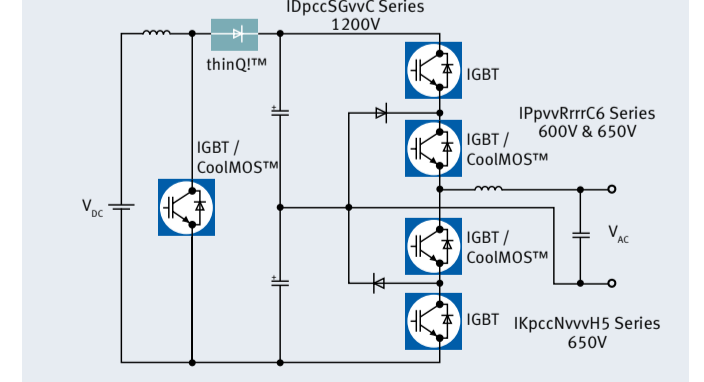
Asymmetrical Full Bridge: Solar Inverter (Phase-Shift & Asymmetrical Full Bridge)



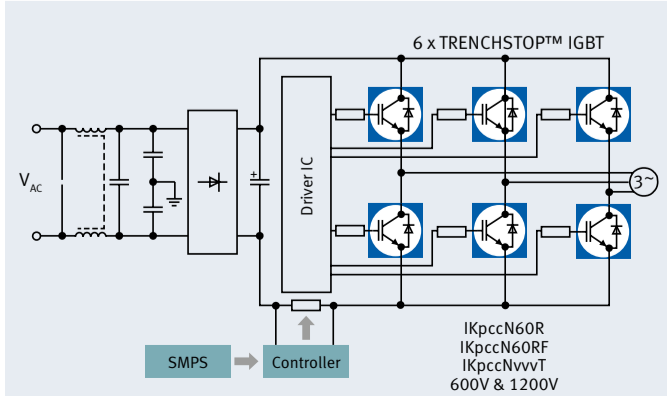
Symmetrical Full Bridge: Solar Inverter (Symmetrical Full Bridge)



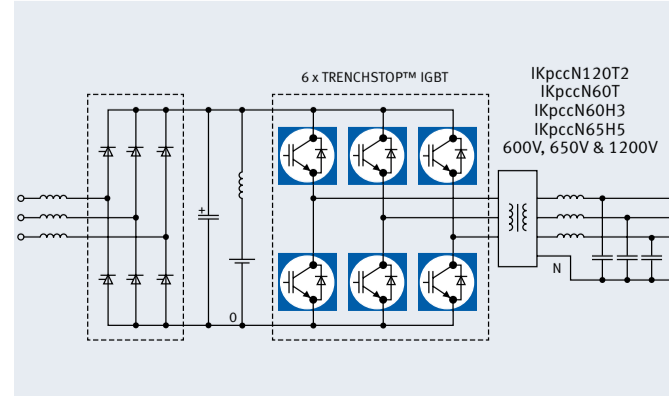
Three Level Inverter Type II: Three-Level Inverter Type II (Solar, UPS)



Motor Control: 3-Phase Motor Control



Uninterruptable Power Supply: Universal Power Supply b6-Bridge



**Nomenclature: IGBT**  
**I**KpccNvvvH3  
**p** = package  
**c** = current  
**v** = Voltage

**Nomenclature: MOSFET**  
**I**PpvrRrrrCFD  
**p** = package  
**c** = current  
**r** = resistance

■ IGBT parts  
 ■ other Infineon parts

[www.infineon.com/igbt](http://www.infineon.com/igbt)  
[www.infineon.com/coolmos](http://www.infineon.com/coolmos)  
[www.infineon.com/sic](http://www.infineon.com/sic)

# IGBT with Anti-Parallel Diode

Product Type	$V_{CE(max)}$ [V]	Diode	Switching Frequency [F]	Package	Switching Hard/Soft	Series	$I_{C(max)}$ @ 100° [A]	$V_{CE(sat)}$ (typ) [V]	$E_{off}$ (typ) [mJ]	$E_{on}$ (typ) [mJ]	$Q_r$ (typ) [nC]
IKB03N120H2	1200	Y	30-100 kHz	TO-220	Hard	HighSpeed 2	3.9	2.2	0.15	0.14	230
IKP03N120H2	1200	Y	30-100 kHz	TO-220	Hard	HighSpeed 2	3.9	2.2	0.15	0.14	230
IKW03N120H2	1200	Y	30-100 kHz	TO-247	Hard	HighSpeed 2	3.9	2.2	0.15	0.14	230
IKA03N120H2	1200	Y	30-100 kHz	TO-220 FP	Hard	HighSpeed 2	8.2	2.2	0.15	0.14	230
IKW20N60H3	600	Y	20-100 kHz	TO-247	Hard	HighSpeed 3	20	1.95	0.24	0.56	390
IKB20N60H3	600	Y	20-100kHz	TO-263	Hard	HighSpeed 3	20	1.95	0.24	0.45	390
IKP20N60H3	600	Y	20-100kHz	TO-220	Hard	HighSpeed 3	20	1.95	0.24	0.45	390
IKW30N60H3	600	Y	20-100 kHz	TO-247	Hard	HighSpeed 3	30	1.95	0.44	0.94	320
IKW40N60H3	600	Y	20-100 kHz	TO-247	Hard	HighSpeed 3	40	1.95	0.58	1.1	810
IKW50N60H3	600	Y	20-100 kHz	TO-247	Hard	HighSpeed 3	50	1.85	0.91	1.45	880
IKW60N60H3	600	Y	20-100kHz	TO-247	Hard	HighSpeed 3	60	1.85	1.13	2.1	1200
IKW75N60H3	600	Y	20-100kHz	TO-247	Hard	HighSpeed 3	75	1.85	1.7	3	1800
IKW15N120H3	1200	Y	20-100 kHz	TO-247	Hard	HighSpeed 3	15	2.05	0.45	1.1	800
IKW25N120H3	1200	Y	20-100 kHz	TO-247	Hard	HighSpeed 3	25	2.05	0.85	1.8	1200
IKW40N120H3	1200	Y	20-100 kHz	TO-247	Hard	HighSpeed 3	40	2.05	1.2	3.2	1900
IKD04N60R	600	Y	2 Hz-4 kHz	TO-252	Hard	RC Drives	4	1.65	0.15	0.09	220
IKD06N60R	600	Y	2 Hz-4 kHz	TO-252	Hard	RC Drives	6	1.65	0.22	0.11	370
IKD10N60R	600	Y	2 Hz-4 kHz	TO-252	Hard	RC Drives	10	1.65	0.38	0.21	560
IKD15N60R	600	Y	2 Hz-4 kHz	TO-252	Hard	RC Drives	15	1.65	0.53	0.37	760
IKU15N60R	600	Y	2 Hz-4 kHz	TO-251	Hard	RC Drives	15	1.65	0.53	0.37	760
IKD03N60RF	600	Y	4-30 kHz	TO-252	Hard	RC Drives Fast	2.5	2.2	0.04	0.05	60
IKD04N60RF	600	Y	4-30 kHz	TO-252	Hard	RC Drives Fast	4	2.2	0.05	0.06	90
IKD06N60RF	600	Y	4 - 30 kHz	TO-252	Hard	RC Drives Fast	6	2.2	0.09	0.09	160
IKD10N60RF	600	Y	4 - 30 kHz	TO-252	Hard	RC Drives Fast	10	2.2	0.16	0.19	270
IKD15N60RF	600	Y	4 - 30 kHz	TO-252	Hard	RC Drives Fast	15	2.2	0.25	0.27	420
IHW40N60R	600	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	40	1.65	0.75	-	-
IHW40N60RF	600	Y	20-100 kHz	TO-247	Soft	RC Fast Soft Switching	40	1.85	0.56	-	-
IHW30N110R3	1100	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	30	1.55	1.15	-	-
IHW15N120R3	1200	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	15	1.48	0.7	-	-
IHW20N120R3	1200	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	20	1.48	0.95	-	-
IHW25N120R2	1200	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	25	1.6	1.59	-	-
IHW30N120R3	1200	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	30	1.55	1.47	d.o.r.	d.o.r.
IHW30N120R2	1200	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	30	1.65	2.4	-	-
IHW40T120	1200	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	40	1.8	3.2	3.3	1880
IHW40N120R3	1200	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	40	1.55	2.02	d.o.r.	d.o.r.
IHW20N135R3	1350	Y	8-60kHz	TO-280	Soft	RC Soft Switching	20	1.6	1.3	-	-
IHW30N135R3	1350	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	30	1.65	1.93	d.o.r.	d.o.r.
IHW40N135R3	1350	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	40	1.65	2.5	d.o.r.	d.o.r.

Product Type	$V_{CE(max)}$ [V]	Diode	Switching Frequency [F]	Package	Switching Hard/Soft	Series	$I_{C(max)}$ @ 100° [A]	$V_{CE(sat)}$ (typ) [V]	$E_{off}$ (typ) [mJ]	$E_{on}$ (typ) [mJ]	$Q_r$ (typ) [nC]
IHW30N160R2	1600	Y	8-60 kHz	TO-247	Soft	RC Soft Switching	30	1.8	2.53	-	-
IKI04N60T	600	Y	2-20 kHz	TO-262	Hard	TRENCHSTOP™	4	1.5	84	61	79
IKP04N60T	600	Y	2-20 kHz	TO-220	Hard	TRENCHSTOP™	4	1.5	84	61	79
IKB06N60T	600	Y	2-20 kHz	TO-263	Hard	TRENCHSTOP™	6	1.5	0.11	0.09	190
IKP06N60T	600	Y	2-20 kHz	TO-220	Hard	TRENCHSTOP™	6	1.5	0.11	0.09	190
IKA06N60T	600	Y	2-20 kHz	TO-220 FP	Hard	TRENCHSTOP™	6.2	1.5	0.11	0.09	190
IKA10N60T	600	Y	2-20 kHz	TO-220 FP	Hard	TRENCHSTOP™	7.2	1.5	0.27	0.16	380
IKA15N60T	600	Y	2-20 kHz	TO-220 FP	Hard	TRENCHSTOP™	8.9	1.5	0.35	0.22	240
IKP10N60T	600	Y	2-20 kHz	TO-220	Hard	TRENCHSTOP™	10	1.5	0.27	0.16	380
IKB10N60T	600	Y	2-20 kHz	TO-263	Hard	TRENCHSTOP™	10	1.5	0.27	0.16	380
IKB15N60T	600	Y	2-20 kHz	TO-263	Hard	TRENCHSTOP™	15	1.5	0.35	0.22	240
IKP15N60T	600	Y	2-20 kHz	TO-220	Hard	TRENCHSTOP™	15	1.5	0.35	0.22	240
IKW20N60T	600	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™	20	1.5	0.46	0.31	310
IKB20N60T	600	Y	2-20 kHz	TO-263	Hard	TRENCHSTOP™	20	1.5	0.46	0.31	310
IKP20N60T	600	Y	2-20 kHz	TO-220	Hard	TRENCHSTOP™	20	1.5	0.46	0.31	310
IHW30N60T	600	Y	2-20 kHz	TO-247	Soft	TRENCHSTOP™	30	1.5	0.77	-	-
IKW30N60T	600	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™	30	1.5	0.77	0.69	920
IHW40T60	600	Y	2-20 kHz	TO-247	Soft	TRENCHSTOP™	40	1.55	0.92	-	-
IKW50N60T	600	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™	50	1.5	1.4	1.2	1800
IKW75N60T	600	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™	75	1.5	2.5	2	2400
IKW08T120	1200	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™	8	1.7	0.7	0.67	1000
IKW15T120	1200	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™	15	1.7	1.4	1.3	1900
IKW25T120	1200	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™	25	1.7	2.2	2	2300
IKW40T120	1200	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™	40	1.8	3.2	3.3	3800
IKW15N120T2	1200	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™2	15	1.7	0.8	1.25	1300
IKW25N120T2	1200	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™2	25	1.7	1.35	1.55	2050
IKW40N120T2	1200	Y	2-20 kHz	TO-247	Hard	TRENCHSTOP™2	40	1.75	2.05	3.2	3300
IKA08N65F5/H5	650V	Y	10-150kHz	TO-220 FP	Hard	TRENCHSTOP™5	6.8	1.6 / 1.65	0.02	0.07	140 / 130
IKA15N65F5/H5	650V	Y	10-150kHz	TO-220 FP	Hard	TRENCHSTOP™5	8.5	1.6 / 1.65	0.04 / 0.05	0.13 / 0.12	100 / 200
IKP08N65F5/H5	650V	Y	10-150kHz	TO-220	Hard	TRENCHSTOP™5	11	1.6 / 1.65	0.02	0.07	140 / 130
IKP15N65F5/H5	650V	Y	10-150kHz	TO-220	Hard	TRENCHSTOP™5	18	1.6 / 1.65	0.04 / 0.05	0.13 / 0.12	100 / 200
IKP40N65F5/H5	650V	Y	10-150kHz	TO-220	Hard	TRENCHSTOP™5	46	1.6 / 1.65	0.10 / 0.12	0.36 / 0.39	450
IKW40N65F5/H5	650V	Y	10-150kHz	TO-247	Hard	TRENCHSTOP™5	46	1.6 / 1.65	0.14 / 0.16	0.36 / 0.35	420 / 410
IKW50N65F5/H5	650V	Y	10-150kHz	TO-247	Hard	TRENCHSTOP™5	56	1.6 / 1.65	0.16 / 0.18	0.49 / 0.52	550 / 570

# IGBT without Anti-Parallel Diode

Product Type	$V_{CE(max)}$ [V]	Diode	Switching Frequency [F]	Package	Switching Hard/Soft	Series	$I_{C(max)}$ @ 100° [A]	$V_{CE(sat)}$ (typ) [V]	$E_{off}$ (typ) [mJ]	$E_{on}$ (typ) [mJ]	$Q_r$ (typ) [nC]
IGB01N120H2	1200	N	30-100 kHz	TO-263	Hard	HighSpeed 2	1.3	2.2	0.06	0.08	n/a
IGD01N120H2	1200	N	30-100 kHz	TO-252	Hard	HighSpeed 2	1.3	2.2	0.06	0.08	n/a
IGP01N120H2	1200	N	30-100 kHz	TO-220	Hard	HighSpeed 2	1.3	2.2	0.06	0.08	n/a

IGA03N120H2	1200	N	30-100 kHz	TO-220	Hard	HighSpeed 2	3	2.2	0.15	0.14	n/a
IGB03N120H2	1200	N	30-100 kHz	TO-263	Hard	HighSpeed 2	3.9	2.2	0.15	0.14	n/a
IGP03N120H2	1200	N	30-100 kHz	TO-220	Hard	HighSpeed 2	3.9	2.2	0.15	0.14	n/a
IGW03N120H2	1200	N	30-100 kHz	TO-247	Hard	HighSpeed 2	3.9	2.2	0.15	0.14	n/a
IGA30N60H3	600	N	20-100kHz	TO-220 FP	Hard	HighSpeed 3	11	1.95	0.44	0.73	n/a
IGB20N60H3	600	N	20-100 kHz	TO-263	Hard	HighSpeed 3	20	1.95	0.24	0.45	n/a
IGP20N60H3	600	N	20-100 kHz	TO-220	Hard	HighSpeed 3	20	1.95	0.24	0.45	n/a
IGW20N60H3	600	N	20-100 kHz	TO-247	Hard	HighSpeed 3	20	1.95	0.24	0.56	n/a
IGP30N60H3	600	N	20-100 kHz	TO-220	Hard	HighSpeed 3	30	1.95	0.44	0.73	n/a
IGB30N60H3	600	N	20-100 kHz	TO-263	Hard	HighSpeed 3	30	1.95	0.44	0.73	n/a
IGW30N60H3	600	N	20-100 kHz	TO-247	Hard	HighSpeed 3	30	1.95	0.44	0.94	n/a
IGW40N60H3	600	N	20-100 kHz	TO-247	Hard	HighSpeed 3	40	1.95	0.58	1.1	n/a
IGW50N60H3	600	N	20-100 kHz	TO-247	Hard	HighSpeed 3	50	1.85	0.91	1.45	n/a
IGW60N60H3	600	N	20-100kHz	TO-247	Hard	HighSpeed 3	60	1.85	1.13	2.1	n/a
IGW75N60H3	600	N	20-100kHz	TO-247	Hard	HighSpeed 3	75	1.85	1.7	3	n/a
IGW100N60H3	600	N	20-100kHz	TO-247	Hard	HighSpeed 3	120	1.85	1.9	3.7	n/a
IGW15N120H3	1200	N	20-100 kHz	TO-247	Hard	HighSpeed 3	15	2.05	0.45	1.1	n/a
IGW25N120H3	1200	N	20-100 kHz	TO-247	Hard	HighSpeed 3	25	2.05	0.85	1.8	n/a
IGW40N120H3	1200	N	20-100 kHz	TO-247	Hard	HighSpeed 3	40	2.05	1.2	3.2	n/a
IGD06N60T	600	N	2-20 kHz	TO-252	Hard	TRENCHSTOP™	6	1.5	0.11	0.09	n/a
IGP06N60T	600	N	2-20 kHz	TO-220	Hard	TRENCHSTOP™	6	1.5	0.11	0.09	n/a
IGB10N60T	600	N	2-20 kHz	TO-263	Hard	TRENCHSTOP™	10	1.5	0.27	0.16	n/a
IGP10N60T	600	N	2-20 kHz	TO-220	Hard	TRENCHSTOP™	10	1.5	0.27	0.16	n/a
IGB15N60T	600	N	2-20 kHz	TO-263	Hard	TRENCHSTOP™	15	1.5	0.35	0.22	n/a
IGP15N60T	600	N	2-20 kHz	TO-220	Hard	TRENCHSTOP™	15	1.5	0.35	0.22	n/a
IGB30N60T	600	N	2-20 kHz	TO-263	Hard	TRENCHSTOP™	30	1.5	0.77	0.69	n/a
IGW30N60T	600	N	2-20 kHz	TO-247	Hard	TRENCHSTOP™	30	1.5	0.77	0.69	n/a
IGB50N60T	600	N	2-20 kHz	TO-263	Hard	TRENCHSTOP™	50	1.5	1.4	1.2	n/a
IGP50N60T	600	N	2-20 kHz	TO-247	Hard	TRENCHSTOP™	50	1.5	1.4	1.2	n/a
IGW50N60T	600	N	2-20 kHz	TO-247	Hard	TRENCHSTOP™	50	1.5	1.4	1.2	n/a
IGW75N60T	600	N	2-20 kHz	TO-247	Hard	TRENCHSTOP					