

# IGBT, SJMOS and Opto Driver Pocket Guide



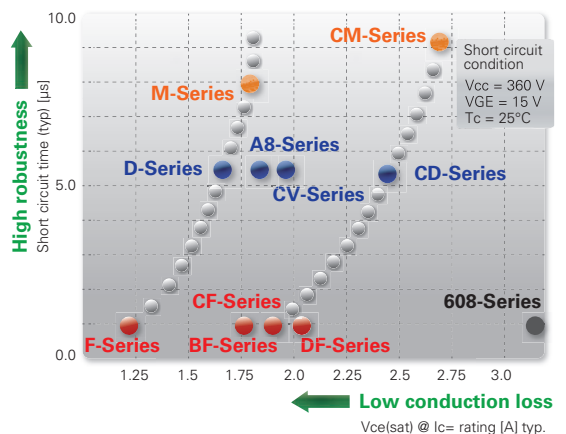
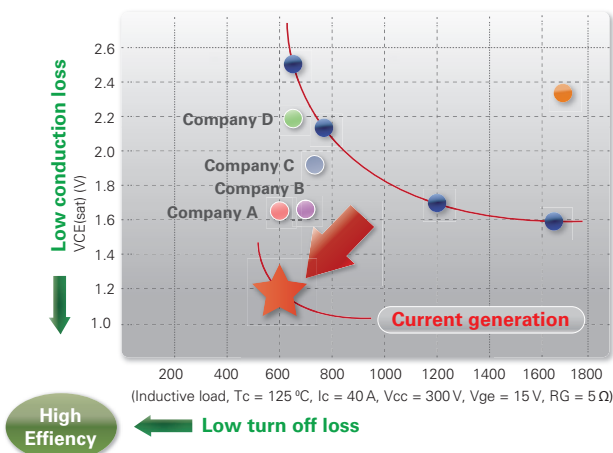
# IGBT Devices (1/2)

Part Number	V <sub>CES</sub> (V)	IGBT						Diode			Package	
		IC (A) @ 100° C	VCesat (V) typ.	tf (ns) typ.	tsc (µs) typ.	Eoff (mJ) typ.	Rthj-c (° C/W)	FRD	Vf (V) typ.	trr (ns) typ.	Pc (W)	Type
RJH60A01RDPD-E0	600	5	1.8	80	5	0.10	3.57	Y	1.5	120	35	TO-252
RJH60A81RDPD-E0		5	1.8	80	5	0.10	3.57	Y	1.5	120	35	TO-252
RJH60V1BDPP-M0		8	1.6	110	6	0.11	4.10	Y	2.5	25	30	TO-220FL
RJH60V1BDPE		8	1.6	110	6	0.11	2.40	Y	2.5	25	52	LDBAK-S
RJH60M1DPP-M0		8	1.9	80	8	0.11	4.10	Y	1.4	80	30	TO-220FL
RJH60M1DPE		8	1.9	80	8	0.11	2.40	Y	1.4	100	52	LDBAK-S
RJH60A83RDPD-E0		10	1.8	80	5	0.15	2.78	Y	1.5	150	45	TO-252
RJH60A83RDPE		10	1.8	80	5	0.15	2.40	Y	1.5	150	52	LDBAK-S
RJH60A83RDPN-E0		10	1.8	80	5	0.15	2.40	Y	1.5	150	52	TO-220AB
RJH60A83RDPP-M0		10	1.8	80	5	0.15	6.00	Y	1.5	150	21	TO-220FL
RJH60D1DPP-M0		10	1.9	90	5	0.13	4.10	Y	1.4	70	30	TO-220FL
RJH60D1DPE		10	1.9	90	5	0.13	2.38	Y	1.4	100	52	LDBAK-S
RJH60V2BDPP-M0		12	1.6	80	6	0.18	3.70	Y	2.5	25	34	TO-220FL
RJH60V2BDPE		12	1.6	80	6	0.18	1.98	Y	2.5	25	63	LDBAK-S
RJH60V2BDPN-E0		12	1.6	80	6	0.18	1.98	Y	2.5	25	63	TO-220AB
RJH60D2DPP-M0		12	1.7	80	5	0.16	3.70	Y	1.2	100	34	TO-220FL
RJH60D2DPE		12	1.7	80	5	0.16	1.98	Y	1.2	100	63	LDBAK-S
RJH60M2DPP-M0		12	1.9	80	8	0.14	3.70	Y	1.2	100	34	TO-220FL
RJH60M2DPE		12	1.9	80	8	0.14	1.98	Y	1.2	100	63	LDBAK-S
RJH60A85RDPE		15	1.8	80	5	0.20	1.10	Y	1.5	150	133	LDBAK-S
RJH60A85RDPN-E0		15	1.8	80	5	0.20	1.10	Y	1.5	150	133	TO-220AB
RJH60A85RDPP-M0		15	1.8	80	5	0.20	4.17	Y	1.5	150	30	TO-220FL
RJH60V3BDPP-M0		17	1.6	80	6	0.30	3.15	Y	2.5	25	40	TO-220FL
RJH60V3BDPE		17	1.6	80	6	0.30	1.11	Y	2.5	25	113	LDBAK-S
RJH60D3DPP-M0		17	1.6	80	5	0.21	3.15	Y	1.3	100	40	TO-220FL
RJH60D3DPE		17	1.6	80	5	0.21	1.11	Y	1.3	100	113	LDBAK-S
RJH60M3DPP-M0		17	1.8	80	8	0.28	3.15	Y	1.3	100	40	TO-220FL
RJH60M3DPE		17	1.8	80	8	0.28	1.11	Y	1.3	100	113	LDBAK-S
RJH60M3DPQ		17	1.8	80	8	0.28	1.11	Y	1.3	100	113	TO-247
RJH60F3DPQ-A0		20	1.4	80	–	0.90	0.70	Y	1.6	140	179	TO-247A
RJP60V0DPM		22	1.5	70	6	–	3.13	N	–	–	40	TO-3PFM
RJP60D0DPP		22	1.6	70	5	–	3.57	N	–	–	35	TO-220FL
RJP60D0DPE		22	1.6	70	5	–	1.02	N	–	–	122	LDBAK-S
RJP60D0DPM		22	1.6	70	5	–	3.13	N	–	–	40	TO-3PFM
RJP60D0DPK		22	1.6	70	5	–	0.89	N	–	–	140	TO-3P
RJH60D0DPM		22	1.6	70	5	0.29	3.13	Y	1.4	100	40	TO-3PFM
RJH60D0DPQ		22	1.6	70	5	0.29	0.89	Y	1.4	100	140	TO-247
RJH60M0DPQ		22	1.8	80	8	0.29	0.89	Y	1.4	100	140	TO-247
RJP60F0DPE		25	1.4	90	–	–	1.02	N	–	–	122	LDBAK-S
RJP60F0DPM		25	1.4	90	–	–	3.13	N	–	–	40	TO-3PFM
RJH60F0DPQ-A0		25	1.4	90	–	0.90	0.62	Y	1.6	140	202	TO-247A
RJP60F4DPM		30	1.4	80	–	–	3.03	N	–	–	41	TO-3PFM
RJP60F4DPQ		30	1.4	80	–	–	0.53	N	–	–	236	TO-247
RJH60F4DPQ-A0		30	1.4	80	–	0.80	0.53	Y	1.6	140	236	TO-247A
RJH60D5DPM		37	1.6	50	5	0.40	2.78	Y	1.4	100	45	TO-3PFM
RJH60D5DPQ		37	1.6	50	5	0.40	0.63	Y	1.4	100	200	TO-247
RJH60D5BDPQ		37	1.6	50	5	0.40	0.63	Y	2.5	25	200	TO-247
RJH60M5DPQ		37	1.8	Tbd	8	0.40	0.63	Y	1.4	100	200	TO-247
RJP60F5DPM		40	1.37	85	–	–	2.78	N	–	–	45	TO-3PFM
RJP60F5DPK		40	1.37	85	–	–	0.48	N	–	–	260	TO-3P
RJH60F5DPQ-A0	40	1.37	85	–	0.85	0.48	Y	1.6	140	260	TO-247A	
RJH60D6DPM	40	1.6	50	5	0.60	2.50	Y	1.4	100	50	TO-3PFM	
RJH60D6DPQ	40	1.6	50	5	0.60	0.48	Y	1.4	100	260	TO-247	
RJH60M6DPQ	40	1.8	80	8	0.60	0.48	Y	1.4	100	260	TO-247	

# IGBT Devices (1/2)

Part Number	V <sub>CES</sub> (V)	IGBT						Diode			Package		
		IC (A) @ 100°C	VCEsat (V) typ.	tf (ns) typ.	tsc (μs) typ.	Eoff (mJ) typ.	Rthj-c (°C/W)	FRD	Vf (V) typ.	trr (ns) typ.	Pc (W)	Type	
RJP6085DPN	600	40	2.65	40	–	–	0.70	–	–	–	179	TO-220AB	
RJP6085DPK		40	2.65	40	–	–	0.70	–	–	–	179	TO-3P	
RJH6085BDPK		40	2.65	40	–	–	0.75	0.70	Y	1.5	100	179	TO-3P
RJH6086BDPK		45	2.65	36	–	–	0.80	0.63	Y	1.4	100	198	TO-3P
RJH60F6DPQ-A0		45	1.35	74	–	–	0.93	0.42	Y	1.6	140	298	TO-247A
RJH60F7ADPK		50	1.35	90	–	–	0.90	0.38	Y	1.6	140	329	TO-3P
RJH60F7BDPQ-A0		50	1.35	90	–	–	0.90	0.38	Y	2.5	25	329	TO-247A
RJH60F7DPQ-A0		50	1.35	90	–	–	0.90	0.38	Y	1.2	90	329	TO-247A
RJH60D7ADPK		50	1.6	50	5	5	0.60	0.42	Y	1.4	100	300	TO-3P
RJH60D7DPM		50	1.6	50	5	5	0.60	2.27	Y	1.4	100	55	TO-3PFM
RJH60D7DPQ		50	1.6	50	5	5	0.60	0.42	Y	1.4	100	300	TO-247
RJH60D7BDPQ		50	1.6	50	5	5	0.60	0.42	Y	2.5	25	300	TO-247
RJH60M7DPQ		50	1.6	Tbd	8	8	0.60	0.42	Y	1.4	100	300	TO-247
RJH6087BDPK		50	2.65	55	–	–	1.05	0.56	Y	1.4	100	223	TO-3P
RJH6088BDPK		60	2.65	60	–	–	1.50	0.47	Y	1.4	100	269	TO-3P
RJH1BF6RDPQ-80		1100	30	1.7	247	–	–	0.55	Y	3	–	227	TO-247
RJH1BF7RDPQ-80			35	1.6	208	–	–	0.50	Y	3	–	250	TO-247
RJH1CM5DPQ-A0	1200	15	2.1	100	10	0.90	0.48	Y	1.7	200	260	TO-247A	
RJH1CF4RDPQ-80		20	2.0	300	–	–	0.80	0.80	Y	4.2	–	156	TO-247
RJH1CD5DPQ-A0		20	2.0	100	5	5	0.90	0.48	Y	1.7	200	260	TO-247A
RJH1CM6DPQ-A0		20	2.1	100	10	10	1.20	0.42	Y	1.7	200	298	TO-247A
RJH1CF5RDPQ-80		25	1.95	272	–	–	0.65	0.65	Y	4.2	–	192	TO-247
RJH1CV5DPQ-A0		25	1.8	200	5	5	1.50	0.48	Y	1.7	200	260	TO-247A
RJH1CD6DPQ-A0		25	2.0	100	5	5	1.20	0.42	Y	1.7	200	298	TO-247A
RJH1CM7DPQ-A0		25	2.1	100	10	10	1.80	0.38	Y	1.7	200	329	TO-247A
RJH1CF6RDPQ-80		30	1.8	275	–	–	0.55	0.55	Y	3	–	227	TO-247
RJH1CV6DPQ-A0		30	1.8	200	5	5	1.70	0.42	Y	1.7	200	298	TO-247A
RJH1CD7DPQ-A0		30	2.0	100	5	5	1.80	0.38	Y	1.7	200	329	TO-247A
RJH1CF7RDPQ-80		35	1.85	250	–	–	0.50	0.50	Y	3	–	250	TO-247
RJH1CV7DPQ-A0		35	1.8	200	5	5	2.50	0.38	Y	1.7	200	329	TO-247A
RJH1DF7RDPQ-80		1350	35	1.95	208	–	–	0.50	Y	3.4	–	250	TO-247

## IGBT Technology

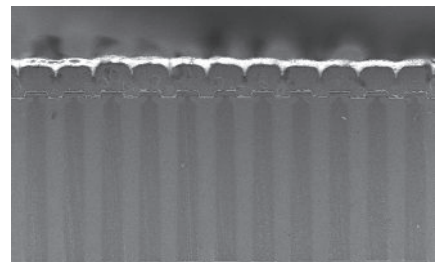
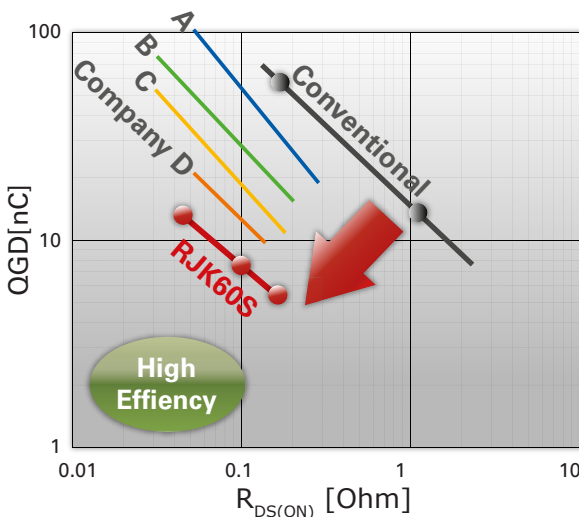
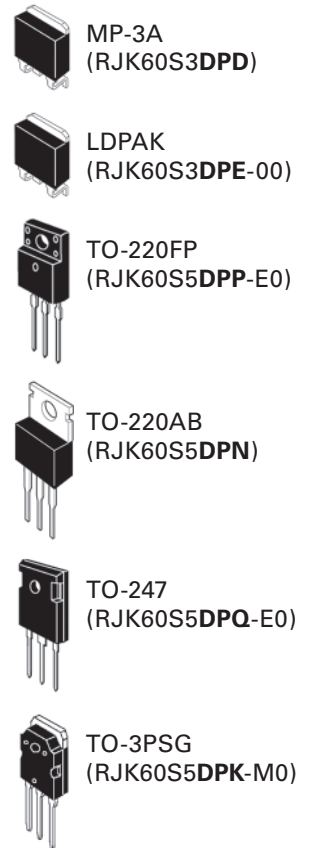


tsc vs. Vce(sat) for IGBT application optimized characteristics

# Super Junction MOSFET

Part Number	V <sub>DSS</sub> (V)	I <sub>D</sub> (A)	R <sub>DS(ON)</sub> typ. (Ω)	Q <sub>G</sub> (nC)	t <sub>RR</sub> (ns)	R <sub>THJ-C</sub> (°C/W)	P <sub>C</sub> (W)	Package	
RJK60S1DPD	600	8	0.84	Tbd	-	Tbd	Tbd	MP-3A	
RJK60S1DPP-E0		8	0.84	Tbd		Tbd	Tbd	TO-220FP	
RJK60S2DPD		10	0.53	Tbd		2.5	50	MP-3A	
RJK60S2DPP-E0		10	0.53	Tbd		4.75	26.3	TO-220FP	
RJK60S3DPD		12	0.35	13		1.7	73.5	MP-3A	
RJK60S3DPE		12	0.35	13		1.5	83.3	LDBAK-S	
RJK60S3DPP-E0		12	0.35	13		4.5	27.7	TO-220FP	
RJK60S4DPE		16	0.23	17.5		1.2	104.1	LDBAK-S	
RJK60S4DPP-E0		16	0.23	17.5		4.17	29.9	TO-220FP	
RJK60S5DPE		20	0.15	29		1	125	LDBAK-S	
RJL60S5DPE		20	0.15	Tbd		150*	Tbd	125	LDBAK-S
RJK60S5DPP-E0		20	0.15	29		-	3.7	33.7	TO-220FP
RJL60S5DPP-E0		20	0.15	Tbd		150*	3.7	33.7	TO-220FP
RJK60S5DPN		20	0.15	29		-	0.75	166.6	TO-220AB
RJK60S5DPQ-E0		20	0.15	29		-	0.65	192.3	TO-247
RJK60S5DPK-M0		20	0.15	29		-	0.65	192.3	TO-3PSG
RJL60S5DPK-M0		20	0.15	Tbd		150*	0.65	192.3	TO-3PSG
RJK60S7DPP-E0		30	0.1	39		-	3.6	34.7	TO-220FP
RJK60S7DPN		30	0.1	39		-	0.65	192.3	TO-220AB
RJK60S7DPQ-E0		30	0.1	39	-	0.55	227.2	TO-247	
RJK60S7DPK-M0	30	0.1	39	-	0.55	227.2	TO-3PSG		
RJK60S8DPK-M0	55	0.045	82	-	0.3	416.6	TO-3PSG		

\*Body diode FRD version



Deep trench structure

QGD-R<sub>DS(ON)</sub> Characteristics improvement comparison

# Opto Driver Devices

Part Number	Package	Absolute Maximum Ratings				Common Mode Immunity CMH, CML (kV/ $\mu$ s) min.	Switching		Min. Creepage Distance (mm)	UVLO Protection	Safety Approvals					Other Features
		BV (Vrms) max.	IO (A) min.	IO (A) max.	TA ( $^{\circ}$ C)		tPHL, tPLH ( $\mu$ s) max.	[tPHL-tPLH] ( $\mu$ s) max.			UL	VDE	CSA	SEMKO	BSI	
PS9306L	6-pin SDIP	5000	0.4	0.6	-40 to +110	25	0.3/0.3 (RG = 47 $\Omega$ )	0.15 (RG = 47 W)	7.0	–	Y	Option	Y	–	Y	Half size of 8-pin DIP
PS9306L2	6-pin SDIP	5000	0.4	0.6	-40 to +110	25	0.3/0.3 (RG = 47 $\Omega$ )	0.15 (RG = 47 W)	8.0	–	Y	Option	Y	–	Y	Half size of 8-pin DIP
PS9506	8-pin DIP	5000	0.4	0.6	-40 to +100	25	0.3/0.3 (RG = 47 $\Omega$ )	0.15 (RG = 47 W)	7.0	–	Y	Option	Y	Y	–	–
PS9506L1	8-pin DIP	5000	0.4	0.6	-40 to +100	25	0.3/0.3 (RG = 47 $\Omega$ )	0.15 (RG = 47 W)	8.0	–	Y	Option	Y	Y	–	–
PS9506L2	8-pin DIP	5000	0.4	0.6	-40 to +100	25	0.3/0.3 (RG = 47 $\Omega$ )	0.15 (RG = 47 W)	8.0	–	Y	Option	Y	Y	–	–
PS9506L3	8-pin DIP	5000	0.4	0.6	-40 to +100	25	0.3/0.3 (RG = 47 $\Omega$ )	0.15 (RG = 47 W)	7.0	–	Y	Option	Y	Y	–	–
PS9307L	6-pin SDIP	5000	0.4	0.6	-40 to +125	50	0.25/0.25 (RG = 47 $\Omega$ )	0.15 (RG = 47 W)	7.0	–	Y	Option	Y	–	–	Half size of 8-pin DIP
PS9307L2	6-pin SDIP	5000	0.4	0.6	-40 to +125	50	0.25/0.25 (RG = 47 $\Omega$ )	0.15 (RG = 47 W)	8.0	–	Y	Option	Y	–	–	Half size of 8-pin DIP
PS9308L	6-pin SDIP	5000	1.0	2.0	-40 to +110	25	0.25/0.25 (RG = 10 $\Omega$ )	0.1 (RG = 10 W)	7.0	–	Y	Option	Y	Y	–	Half size of 8-pin DIP
PS9308L2	6-pin SDIP	5000	1.0	2.0	-40 to +110	25	0.25/0.25 (RG = 10 $\Omega$ )	0.1 (RG = 10 W)	8.0	–	Y	Option	Y	Y	–	Half size of 8-pin DIP
PS9305L	8-pin SDIP	5000	2.0	2.5	-40 to +110	25	0.25/0.25 (RG = 10 $\Omega$ )	0.1 (RG = 10 W)	7.0	Y	Y	Option	Y	Y	–	–
PS9305L2	8-pin SDIP	5000	2.0	2.5	-40 to +110	25	0.25/0.25 (RG = 10 $\Omega$ )	0.1 (RG = 10 W)	8.0	Y	Y	Option	Y	Y	–	–
PS9505	8-pin DIP	5000	2.0	2.5	-40 to +110	25	0.25/0.25 (RG = 10 $\Omega$ )	0.1 (RG = 10 W)	7.0	Y	Y	Option	Y	Y	–	–
PS9505L1	8-pin DIP	5000	2.0	2.5	-40 to +110	25	0.25/0.25 (RG = 10 $\Omega$ )	0.1 (RG = 10 W)	8.0	Y	Y	Option	Y	Y	–	–
PS9505L2	8-pin DIP	5000	2.0	2.5	-40 to +110	25	0.25/0.25 (RG = 10 $\Omega$ )	0.1 (RG = 10 W)	8.0	Y	Y	Option	Y	Y	–	–
PS9505L3	8-pin DIP	5000	2.0	2.5	-40 to +110	25	0.25/0.25 (RG = 10 $\Omega$ )	0.1 (RG = 10 W)	7.0	Y	Y	Option	Y	Y	–	–
PS9402	16-pin SO16	5000	2.0	2.5	-40 to +110	25	0.2/0.2 (RG = 10 $\Omega$ )	0.1 (RG = 10 W)	8.0	Y	Y	Option	Y	–	–	Desaturation detection Miller clamping

# IGBT, SJMOS and Opto Driver Pocket Guide

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Before purchasing or using any Renesas Electronics products listed herein, please refer to the latest product manual and/or data sheet in advance.

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