

1.5 D-Series Evolution : Switching MOSFETs

1.5.1 DI-Series

Hitachi switching MOSFETs use the vertical structure described on page 4 and known generically as the D-Series. This structure is better suited to switching applications.

Power MOSFET technology has much in common with that used in MOS memory products. Hitachi has been able to apply its considerable experience as a world leading

memory supplier to product 'state of the art' power MOSFETs.

The evolution chart below show the continued power MOSFET development has expanded the DI-Series to now include DII, DIII and DIV families. The chart below also demonstrates the improvement on key typical electrical characteristics such as increasing gate breakdown and reducing threshold voltage, V_{TH} and "ON-STATE" resistance, $R_{DS(ON)}$.

D-Series Evolution Chart

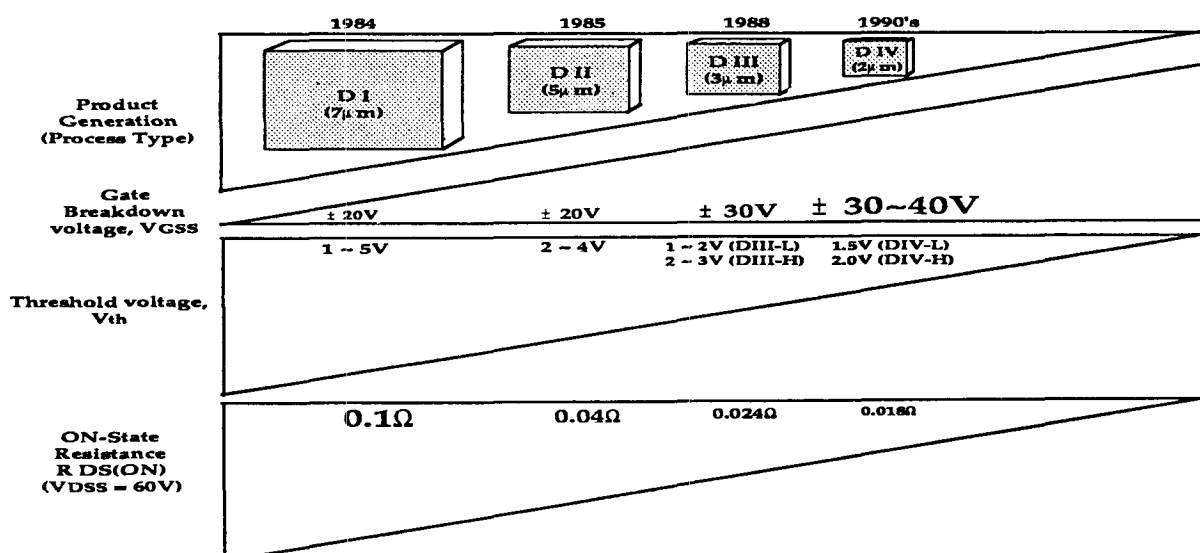


Table 4 : DI-Series Typical Characteristics

Package	Type Number		Absolute Maximum Ratings				Electrical Characteristics (typ.)						
	N-Ch	P-Ch	VDS (V)	VGSS (V)	ID (A)	Pch * (W)	RDS(on) (Ω)		lyfal (S) **	ton (ns)	toff, (ns)	Ciss (pF)	
							typ.	max.					
DPAK	2SK416	2SJ120	40	± 20	2	10	0.5/1.2	0.8/1.5	0.4/0.25	25/35	35/40	170/150	
	2SK429	-	100		3	20	0.5	0.7	0.9	35	50	280	
	2SK430	-	150				0.8	1				260	
TO-126	2SK511	-	250	± 9	0.3	8	30	50	0.08	-	-	20	
TO-220AB	-	2SJ117	400	± 20	-2	40	5	7	0.7	35	80	520	
TO-3P	2SK399	2SJ113	100	± 20	10	100	0.2/0.25	0.25/0.35	2	50/70	110/160	800/1100	
	2SK413	2SJ118	140		8		0.4	0.5	2.0/1.8	50/70	110/160	800/1050	
	2SK414	2SJ119	160				0.5/0.6	0.7/0.8	1.8	40/50	110/160	750/1000	
	2SK400	2SJ114	200										
	2SK1317	-	1500		2.5		9	12	0.75	87	170	990	
	2SK1835	-			4	125	4.65	7	1.4	105	310	1700	
TO-3	2SK308	-	120	± 20	10	100	0.2	0.3	2.8	60	160	1130	
	2SK401	-	250		8		0.3	0.4	2.5	65	180	1400	
	2SK298	2SJ116	400				1.1/1.75	1.75/2.25	1.7/1.6	50/60	120/220	800/1400	
	2SK299	-	450				100	1.1	1.75	1.7	50	120	800
	2SK312	-	400		12	125	0.67	0.9	2.5	70	200	1500	
	2SK313	-	450				0.55	0.65	3.5	75	300	1800	
	2SK512	-	500										
	2SK351	-	800		5	125	1.7	3	2	100	300	1900	
	2SK646	-	1200		4	125	3	4	1.3	80	350	2000	

Keynote :

2SK1317 and 2SK1835 devices have opened the way for higher performance along with system size reduction in high voltage electrical switching applications mainly :

- Switching Power Supplies for OA and Industrial machinery
- Horizontal deflection output of high resolution CRT display units