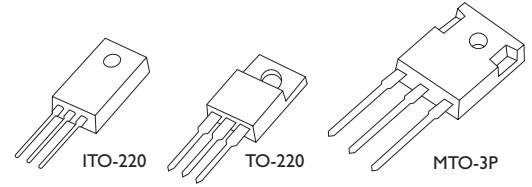


# HIGH VOLTAGE • HIGH SPEED SWITCHING TRANSISTORS

## HDT series

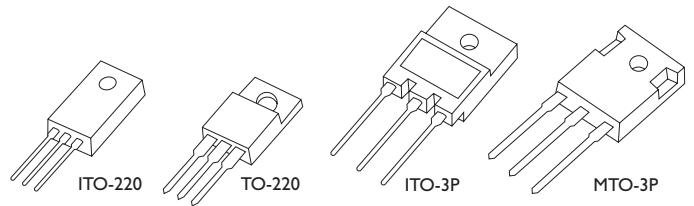
Bipolar transistors (NPN)



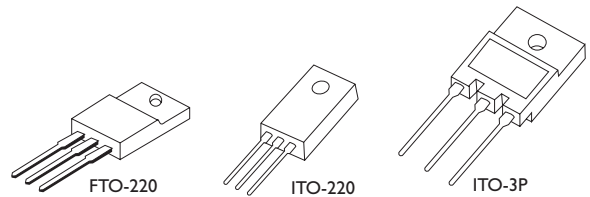
Type No.	Absolute Maximum Ratings								Electrical Characteristics									Outline	
	V <sub>RM</sub>	V <sub>CEO</sub>	V <sub>EBO</sub>	I <sub>C</sub>	I <sub>B</sub>	P <sub>T</sub>	T <sub>stg</sub>	T <sub>J</sub>	V <sub>CEO</sub> (sus) (min)	h <sub>FE</sub> (min)	V <sub>CE</sub> (sat) (max)	V <sub>BE</sub> (sat) (max)	θ <sub>JC</sub> (max)	f <sub>T</sub> (typ)	t <sub>on</sub> (max)	t <sub>s</sub> (max)	t <sub>f</sub> (max)	Package	Figure
	[V]	[V]	[V]	[A]	[A]	[W]	[°C]	[°C]	[V]	(min)	[V]	[V]	[°C/W]	[MHz]	[μs]	[μs]	[μs]		
2SC4310	900	800	7	6	3	50	-55	150	800	7	1.5	2.5	2.5	7	0.5	3	0.5	TO-220	80-3
4311						40							3.1					TO-220	82-4
4312						80							1.56					MTO-3P	86-2
4313				10	4	100	150	1.25											
4314				15	6	130	150	0.96											

## HFX series

Bipolar transistors (NPN)



Type No.	Absolute Maximum Ratings								Electrical Characteristics									Outline			
	V <sub>RM</sub>	V <sub>CEO</sub>	V <sub>EBO</sub>	I <sub>C</sub>	I <sub>B</sub>	P <sub>T</sub>	T <sub>stg</sub>	T <sub>J</sub>	V <sub>CEO</sub> (sus) (min)	h <sub>FE</sub> (min)	V <sub>CE</sub> (sat) (max)	V <sub>BE</sub> (sat) (max)	θ <sub>JC</sub> (max)	f <sub>T</sub> (typ)	t <sub>on</sub> (max)	t <sub>s</sub> (max)	t <sub>f</sub> (max)	Package	Figure		
	[V]	[V]	[V]	[A]	[A]	[W]	[°C]	[°C]	[V]	(min)	[V]	[V]	[°C/W]	[MHz]	[μs]	[μs]	[μs]				
2SC4230	1200	800	7	2	1	50	-55	150	800	8	1	1.5	2.5	8	0.5	3.5	0.3	TO-220	80-3		
4231						30							4.16					ITO-220	82-4		
4232						70							1.7					MTO-3P	86-2		
4233				3	3	100							60					150	2.08	TO-220	80-3
4234													45						2.77	ITO-220	82-4
4235													80						1.56	MTO-3P	86-2
4236				6	3	100							150					1.25			
4237				10	4	150							150					0.83			
4583				3	1	50							150					2.5			
4584				6	3	65							150					1.92	ITO-3P	88-3	
4585				10	4	85							150					1.47			



## Switching Transistors for Lighting Equipment

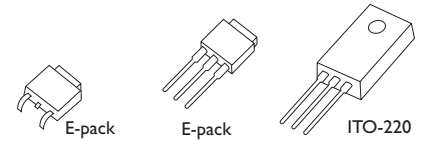
Bipolar transistors (NPN)

Type No.	Absolute Maximum Ratings								Electrical Characteristics									Outline	
	V <sub>RM</sub>	V <sub>CEO</sub>	V <sub>EBO</sub>	I <sub>C</sub>	I <sub>B</sub>	P <sub>T</sub>	T <sub>stg</sub>	T <sub>J</sub>	V <sub>CEO</sub> (sus) (min)	h <sub>FE</sub> (min)	V <sub>CE</sub> (sat) (max)	V <sub>BE</sub> (sat) (max)	θ <sub>JC</sub> (max)	f <sub>T</sub> (typ)	t <sub>on</sub> (max)	t <sub>s</sub> (max)	t <sub>f</sub> (max)	Package	Figure
	[V]	[V]	[V]	[A]	[A]	[W]	[°C]	[°C]	[V]	(min)	[V]	[V]	[°C/W]	[MHz]	[μs]	[μs]	[μs]		
2SC4940	1200	550	7	4	2	30	-55	150	550	10	1	1.5	4.16	10	0.8	3.0	0.3	ITO-220	82-4
4941	1500	800		6	3	65	150		800	15	0.5		1.92	8	0.5	3.5		ITO-3P	88-3
5382	1200	550	9	6	3	40	150	550	10	1	1.5	3.13	—	1.3	4.0	0.3	FTO-220	84-3	

# LOW SATURATION VOLTAGE SWITCHING TRANSISTORS

## LSV series

Bipolar transistors

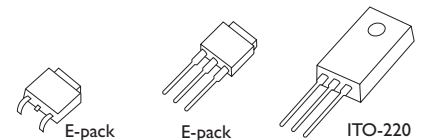


Type No.	Absolute Maximum Ratings								Electrical Characteristics								Outline				
	V <sub>CBO</sub>	V <sub>CEO</sub>	V <sub>EB0</sub>	I <sub>C</sub>	I <sub>B</sub>	P <sub>T</sub>	T <sub>stg</sub>	T <sub>J</sub>	V <sub>CEO</sub> (sus) (min)	h <sub>FE</sub> (min)	V <sub>CE</sub> (sat) (max)	V <sub>BE</sub> (sat) (max)	θ <sub>JC</sub> (max)	f <sub>r</sub> (typ)	t <sub>on</sub> (max)	t <sub>s</sub> (max)	t <sub>f</sub> (max)	Package	Figure		
	[V]	[V]	[V]	[A]	[A]	[W]	[°C]	[°C]	[V]	(min)	[V]	[V]	[°C/W]	[MHz]	[μs]	[μs]	[μs]				
2SA1795	-60	-40	-7	-5	-1.5	10	-55	150	-40	70	-0.3	-1.2	12.5	50	0.3	1.5	0.5	E-pack	*1		
1796				-7		12.5															
1679				-5		5															
1598				-7	25	150							5							ITO-220	82-4
1599				-10	30																
1600				-12	45																
1601				-15	-2	45							2.77								
2SC4668	60	40	7	7	1.5	10	-55	150	40	70	0.3	1.2	12.5	50	0.3	1.5	0.5	E-pack	*1		
4669				10		12.5															
4148				7		5															
4149				10	25	150							5							ITO-220	82-4
4150				12	30																
4151				15	45																
4876				30	4	45							2.78								

\*1: Leaded package - Fig. 78-3; SMD package - Fig. 77-3

## HSV series

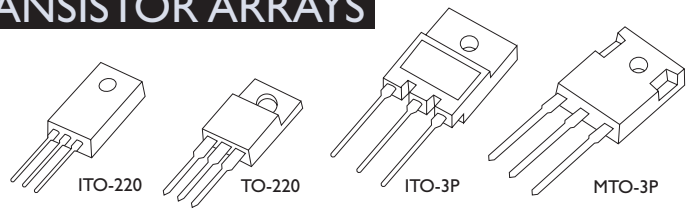
Bipolar transistors



Type No.	Absolute Maximum Ratings								Electrical Characteristics								Outline		
	V <sub>CBO</sub>	V <sub>CEO</sub>	V <sub>EB0</sub>	I <sub>C</sub>	I <sub>B</sub>	P <sub>T</sub>	T <sub>stg</sub>	T <sub>J</sub>	V <sub>CEO</sub> (sus) (min)	h <sub>FE</sub> (min)	V <sub>CE</sub> (sat) (max)	V <sub>BE</sub> (sat) (max)	θ <sub>JC</sub> (max)	f <sub>r</sub> (typ)	t <sub>on</sub> (max)	t <sub>s</sub> (max)	t <sub>f</sub> (max)	Package	Figure
	[V]	[V]	[V]	[A]	[A]	[W]	[°C]	[°C]	[V]	(min)	[V]	[V]	[°C/W]	[MHz]	[μs]	[μs]	[μs]		
2SA1876	-80	-80	-7	-3	-1.5	10	-55	150	-80	70	-0.3	-1.2	12.5	50	0.3	1.5	0.2	E-pack	*1
1877				-5		5													
1878				-7		25													
1879				-10	150														
1880				-10	150														
2SC4978	100	80	7	3	1.5	10	-55	150	80	70	0.3	1.2	12.5	50	0.3	1.5	0.2	E-pack	*1
4979				5		5													
4980				7		25													
4981				7	150														
4982				10	150														

\*1: Leaded package - Fig. 78-3; SMD package - Fig. 77-3

# DARLINGTON TRANSISTORS & TRANSISTOR ARRAYS



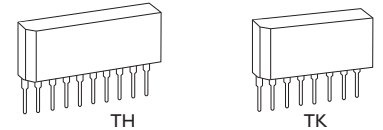
## Darlington Power Transistors

Bipolar transistors

Type No.	Absolute Maximum Ratings								Electrical Characteristics								Outline		
	V <sub>CB0</sub>	V <sub>CEO</sub>	V <sub>EB0</sub>	I <sub>C</sub>	I <sub>B</sub>	P <sub>T</sub>	T <sub>stg</sub>	T <sub>J</sub>	V <sub>CEO</sub> (sus) (min)	h <sub>FE</sub> (min)	V <sub>CE</sub> (sat) (max)	V <sub>BE</sub> (sat) (max)	θ <sub>JC</sub> (max)	f <sub>r</sub> (typ)	t <sub>on</sub> (max)	t <sub>s</sub> (max)	t <sub>f</sub> (max)	Package	Figure
	[V]	[V]	[V]	[A]	[A]	[W]	[°C]	[°C]	[V]	(min)	[V]	[V]	[°C/W]	[MHz]	[μs]	[μs]	[μs]		
2SD1022	100	100	7	5	0.5	30	-55	150	—	1500	1.5	2	4.17	20	2	5	3	TO-220	80-3
1023	200	200														8	5		
1024	100	100	7	8	0.5	50	150	—	1500	1.5	2	2.5	20	2	5	3	MTO-3P	86-2	
1025	200	200													8	5			
1026	100	100	7	15	1	100	150	—	1500	1.5	2	1.25	20	2	5	3	ITO-3P	88-3	
1027	200	200													8	5			
2196	200	200				65						1.92			12	5			
1788	100	100	7	±4	0.3	25	-55	150	—	1500	1.5	2	5.0	20	2	12	5	ITO-220	82-4
1789	200	200																	
1790	60 <sup>±10</sup>	60 <sup>±10</sup>	7	7	0.5	30	150	—	1500	1.5	2	4.17	20	2	2	12	5	ITO-220	82-4
1791	100	100																	
1792	200	200	7	10	0.5	50	150	—	1500	1.5	2	2.5	20	2	2	12	5	ITO-220	82-4
1793	100	100																	
1794	200	200	12	10	0.5	50	150	400	150	1.5	2	2.5	10	2	15	15			
1795	500	400																	
2SB1282	-100	-100	-7	±4	-0.3	25	-55	150	—	1500	-1.5	-2	5	20	1	4	2	ITO-220	82-4
1283				-7	-0.5	30							4.16						
1284				-10	-0.8	35							3.57						
1285				-15	-1	100							1.25						
1448				-15	-1	65							1.92						

## Transistor Arrays

Bipolar transistors Arrays



Type No.	Absolute Maximum Ratings								Electrical Characteristics								Remarks	Outline	
	V <sub>CB0</sub>	V <sub>CEO</sub>	V <sub>EB0</sub>	I <sub>C</sub>	I <sub>B</sub>	P <sub>T</sub>	T <sub>stg</sub>	T <sub>J</sub>	h <sub>FE</sub> (min)	V <sub>CE</sub> (sat) (max)	V <sub>BE</sub> (sat) (max)	θ <sub>JA</sub> (max)	t <sub>on</sub> (max)	t <sub>s</sub> (max)	t <sub>f</sub> (max)	Package		Figure	
	[V]	[V]	[V]	[A]	[A]	[W]	[°C]	[°C]	(min)	[V]	[V]	[°C/W]	[μs]	[μs]	[μs]				
TH3L10	100	100	7	±3	0.3	3.5	-55~150	150	1500	1.5	2	35	2	8	3	NPNX4	TH	65	
3L20	200	200																	
3C10	±100	±100	±7	±3	±0.3	3.5	-55~150	150	1500	±1.5	±2	35	2	8	3	NPNX2, PNPX2	TH	65	
3J10	-100	-100																	-7
3L10Z*	60 <sup>±10</sup>	60 <sup>±10</sup>	7	5	0.5	3.5	-55~150	150	1500	1.5	2	35	2	8	3	NPNX4	TH	65	
5L10	100	100																	
5L20	200	200													5				
TK3L10	100	100	7	±3	0.3	2.5	-55~150	150	1500	1.5	2	50	2	8	3	NPNX3	TK	66	
3L20	200	200																	
3J10	-100	-100	±7	±3	±0.3	2.5	-55~150	150	1500	-1.5	-2	50	2	8	3	NPNX3	TK	66	
3L10Z*	60 <sup>±10</sup>	60 <sup>±10</sup>																	-7
5L10	100	100	7	5	0.5	2.5	-55~150	150	1500	1.5	2	50	2	8	3	NPNX3	TK	66	
5L20	200	200																	
TH5P4	±60	±40	±7	±5	±1.5	3.5			70	±0.3	±1.2	35.7	0.3	2	0.5	NPNX2, PNPX2	TH	65	

\*: With zener diode between collector and base