

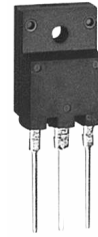


## 2SD1650

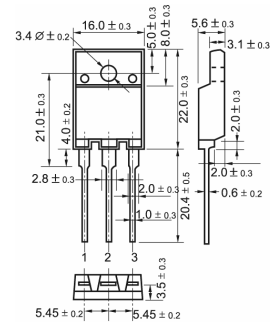
## SILICON DIFFUSED POWER TRANSISTOR

### GENERAL DESCRIPTION

High voltage, high-speed switching npn transistors in a plastic envelope with integrated efficiency diode, primarily for use in horizontal deflection circuits of colour television receivers



TO-3PML



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{CESM}$	Collector-emitter voltage peak value	$V_{BE} = 0V$	-	1500	V
$V_{CEO}$	Collector-emitter voltage (open base)		-	600	V
$I_C$	Collector current (DC)		-	3.5	A
$I_{CM}$	Collector current peak value		-	7.0	A
$P_{tot}$	Total power dissipation	$T_{mb} \leq 25^\circ C$	-	50	W
$V_{CEsat}$	Collector-emitter saturation voltage	$I_C = 2.0A; I_B = 0.4A$	-	1.5	V
$I_{csat}$	Collector saturation current	$f = 16KHz$	-	-	A
$V_F$	Diode forward voltage	$I_F = 2.0A$	-	2.0	V
$t_f$	Fall time	$I_C = 2A, I_{B1} = -I_{B2} = 0.4A, V_{CC} = 140V$	-	1.0	$\mu s$

### LIMITING VALUES

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{CESM}$	Collector-emitter voltage peak value	$V_{BE} = 0V$	-	1500	V
$V_{CEO}$	Collector-emitter voltage (open base)		-	600	V
$I_C$	Collector current (DC)		-	3.5	A
$I_{CM}$	Collector current peak value		-	7.0	A
$I_B$	Base current (DC)		-	1.5	A
$I_{BM}$	Base current peak value		-	3	A
$P_{tot}$	Total power dissipation	$T_{mb} \leq 25^\circ C$	-	50	W
$T_{stn}$	Storage temperature		-55	150	$^\circ C$
$T_j$	Junction temperature		-	150	$^\circ C$

### ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$I_{CE}$	Collector cut-off current	$V_{BE} = 0V; V_{CE} = V_{CESMmax}$	-	0.5	mA
$I_{CES}$	Collector saturation current	$V_{BE} = 0V; V_{CE} = V_{CESMmax}$	-	1.0	mA
$V_{CEOsust}$	Collector-emitter sustaining voltage	$T_j = 125^\circ C$ $I_B = 0A; I_C = 100mA$ $L = 25mH$	-	-	V
$V_{CEsat}$	Collector-emitter saturation voltages	$I_C = 2.0A; I_B = 0.4A$	-	1.5	V
$V_{BEsat}$	Base-emitter saturation voltage	$I_C = 2.0A; I_B = 0.4A$	-	2.0	V
$h_{FE}$	DC current gain	$I_C = 1A; V_{CE} = 5V$	8	30	
$V_F$	Diode forward voltage	$I_F = 2.0A$	-	2.0	V
$f_T$	Transition frequency at $f = 1MHz$	$I_C = 0.1A; V_{CE} = 10V$	3	-	MHz
$C_c$	Collector capacitance at $f = 1MHz$	$V_{CB} = 10V$	-	100	pF
$t_s$	Switching times (16KHz line deflection circuit)	$I_C = 2A, I_{B1} = -I_{B2} = 0.4A, V_{CC} = 140V$	-	4.5	$\mu s$
$t_f$	Turn-off storage time Turn-off fall time	$I_C = 2A, I_{B1} = -I_{B2} = 0.4A, V_{CC} = 140V$	-	1.0	$\mu s$