High Voltage Fast-Switching NPN Power Transistor

FEATURES

- High Voltage Capability
- Fast Switching Speed
- Pb-free plating
- RoHS compliant
- Halogen-free mold compound

APPLICATION

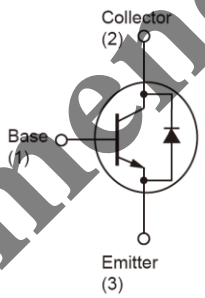
- Electronic Ballast
- Switch mode power supply

KEY PERFORMANCE PARAMETERS			
PARAMETER		**VALUE**	**UNIT**
BV_{CEO}		450	V
BV_{CBO}		1050	V
I_C		2.5	A
$V_{CE(SAT)}$	I_C=0.7A, I_B=0.14A	0.5	V

Pb-Free RoHS COMPLIANT HALOGEN FREE

TO-251 (IPAK)

TO-252 (DPAK)



Notes: Moisture sensitivity level: level 3. Per J-STD-020

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)			
PARAMETER	**SYMBOL**	**LIMIT**	**UNIT**
Collector-Base Voltage	V_{CBO}	1050	V
Collector-Emitter Voltage @ V_{BE}=0V	V_{CES}	450	V
Emitter-Base Voltage	V_{EBO}	15	V
Collector Current	I_C	2.5	A
Collector Peak Current (tp <5ms)	I_{CM}	4	A
Base Current	I_B	1.5	A
Base Peak Current (tp <5ms)	I_{BM}	3	A
Power Total Dissipation @ T_A=25ºC	P_{DTOT}	30	W
Maximum Operating Junction Temperature	T_J	+150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

THERMAL PERFORMANCE			
PARAMETER	**SYMBOL**	**LIMIT**	**UNIT**
Junction to Case Thermal Resistance	$R_{\Theta JC}$	4.17	°C/W
Junction to Ambient Thermal Resistance	$R_{\Theta JA}$	100	°C/W

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)						
PARAMETER	**CONDITIONS**	**SYMBOL**	**MIN**	**TYP**	**MAX**	**UNIT**
Collector-Base Voltage	I_C =0.5mA	BV_{CBO}	1050	--	--	V
Collector-Emitter Breakdown Voltage	I_C =5mA	BV_{CEO}	450	--	--	V
Emitter-Base Breakdown Voltage	I_E =1mA	BV_{EBO}	15	--	--	V
Collector Cutoff Current	V_{CE} =400V, I_B=0	I_{CEO}	--	10	250	μA
Collector Cutoff Current	V_{CB} =950V, I_E =0	I_{CBO}	--	--	10	μA
Collector-Emitter Saturation Voltage	I_C=0.7A, I_B =0.14A	$V_{CE(SAT)}1$	---	--	0.5	V
Collector-Emitter Saturation Voltage	I_C=2A, I_B =0.6A	$V_{CE(SAT)}2$	---	1.5	3.0	V
Base-Emitter Saturation Voltage	I_C=2A, I_B =0.6A	$V_{BE(SAT)}1$	--	1.0	1.6	V
DC Current Gain	V_{CE} =5V, I_C =0.1A	$h_{FE}1$	50	70	100	
	V_{CE} =3V, I_C =0.5A	$h_{FE}2$	18	23	50	
Diode Forward Voltage	I_C=1A	V_F	--	--	1.5	V
Rise Time (Note 2)	V_{CC} =5V, I_C =0.5A	t_r	--	--	1	μs
Storage Time (Note 2)		t_{STG}	2.5	3	3.5	μs
Fall Time (Note 2)		t_f	--	--	1.2	μs
Repetitive Avalanche Energy	L=2mH	E_{AR}	5	--	--	mJ

Notes:

1. Pulse test: ≤380μs, duty cycle ≤ 2%
2. For DESIGN AID ONLY, not subject to production testing.

ORDERING INFORMATION

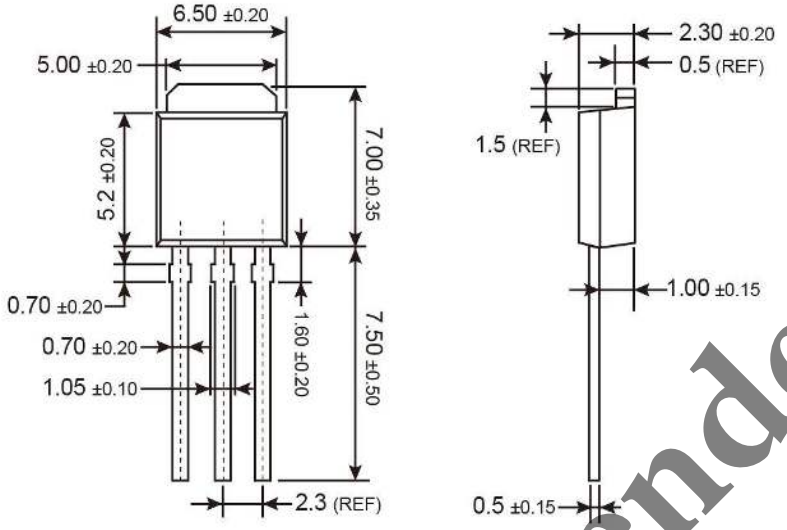
PART NO.	PACKAGE	PACKING
TSC5802DCH C5G	TO-251	75pcs / Tube
TSC5802DCP ROG	TO-252	2,500pcs / 13” Reel

Note:

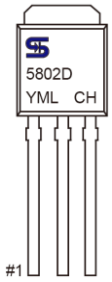
1. Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
2. Halogen-free according to IEC 61249-2-21 definition

PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

TO-251 (IPAK)



Marking Diagram



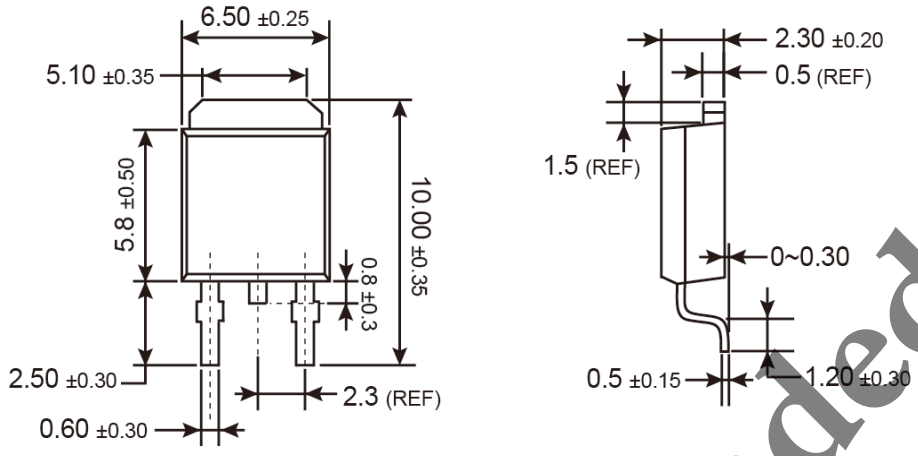
Y = Year Code
M = Month Code for Halogen Free Product

O	=Jan	**P**	=Feb	**Q**	=Mar	**R**	=Apr
S	=May	**T**	=Jun	**U**	=Jul	**V**	=Aug
W	=Sep	**X**	=Oct	**Y**	=Nov	**Z**	=Dec

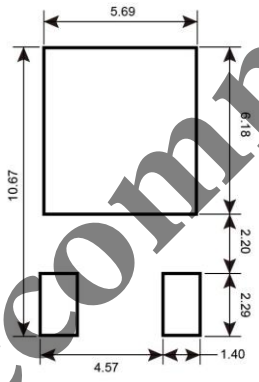
L = Lot Code (1~9, A~Z)

PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

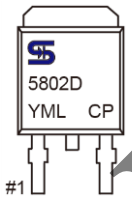
TO-252 (DPAK)



SUGGESTED PAD LAYOUT



MARKING DIAGRAM



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