



STGB10NB37LZ

N-CHANNEL CLAMPED 20A - D2PAK INTERNALLY CLAMPED PowerMesh™ IGBT

TYPE	V _{CES}	V _{CE(sat)}	I _C
STGB10NB37LZ	CLAMPED	< 1.8 V	20 A

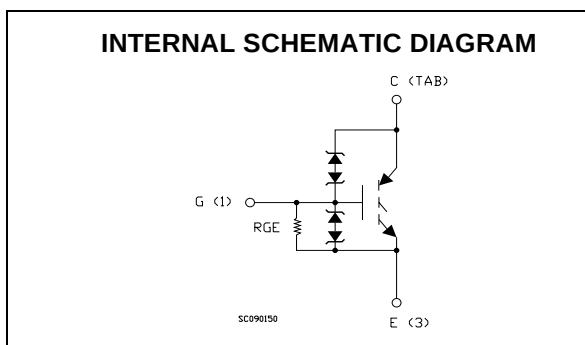
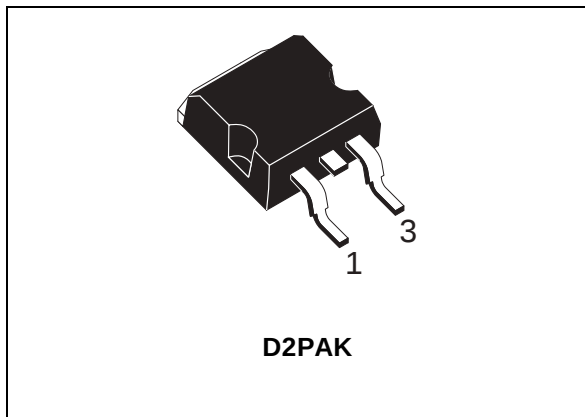
- POLYSILICON GATE VOLTAGE DRIVEN
- LOW THRESHOLD VOLTAGE
- LOW ON-VOLTAGE DROP
- LOW GATE CHARGE
- HIGH CURRENT CAPABILITY
- HIGH VOLTAGE CLAMPING FEATURE

DESCRIPTION

Using the latest high voltage technology based on a patented strip layout, STMicroelectronics has designed an advanced family of IGBTs, the PowerMESH™ IGBTs, with outstanding performances. The built in collector-gate zener exhibits a very precise active clamping while the gate-emitter zener supplies an ESD protection.

APPLICATIONS

- AUTOMOTIVE IGNITION



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CES}	Collector-Emitter Voltage (V _{GS} = 0)	CLAMPED	V
V _{ECR}	Reverse Battery Protection	18	V
V _{GE}	Gate-Emitter Voltage	CLAMPED	V
I _C	Collector Current (continuous) at T _C = 100°C	20	A
I _{CM}	Collector Current (pulse width < 100μs)	60	A
P _{TOT}	Total Dissipation at T _C = 25°C	125	W
	Derating Factor	0.83	W/°C
ESD	ESD (Human Body Model)	4	KV
T _{stg}	Storage Temperature	-65 to 175	°C
T _j	Max. Operating Junction Temperature	175	°C

THERMAL DATA

Rthj-case	Thermal Resistance Junction-case Max	1.2	°C/W
Rthj-amb	Thermal Resistance Junction-ambient Max	62.5	°C/W
Rthc-sink	Thermal Resistance Case-sink Typ	0.2	°C/W

ELECTRICAL CHARACTERISTICS (TCASE = 25 °C UNLESS OTHERWISE SPECIFIED)

OFF

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV(CES)	Clamped Voltage	I _C = 2 mA, V _{GE} = 0, T _j = - 40°C to 150°C	375	400	425	V
BV(ECR)	Emitter Collector Break-down Voltage	I _{EC} = 75 mA, V _{GE} = 0, T _j = - 40°C to 150°C	18			V
BV _{GE}	Gate Emitter Break-down Voltage	I _G = ± 2 mA T _j = - 40°C to 150°C	12		16	V
I _{CES}	Collector cut-off Current (V _{GE} = 0)	V _{CE} = 15 V, V _{GE} = 0, T _j = 150 °C V _{CE} = 200 V, V _{GE} = 0, T _C = 150°C			10 100	μA μA
I _{GES}	Gate-Emitter Leakage Current (V _{CE} = 0)	V _{GE} = ± 10V, V _{CE} = 0			± 700	μA
R _{GE}	Gate Emitter Resistance			20		KΩ

ON (1)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V _{GE(th)}	Gate Threshold Voltage	V _{CE} = V _{GE} , I _C = 250μA, T _j = - 40°C to 150°C	0.6		2.4	V
V _{CE(SAT)}	Collector-Emitter Saturation Voltage	V _{GE} = 4.5V, I _C = 10 A, T _j = 25°C V _{GE} = 4.5V, I _C = 10 A, T _C = -40°C		1.2 1.3	1.8	V V
I _C	Collector Current	V _{GE} = 4.5V, V _{CE} = 9 V	20			A

DYNAMIC

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
g _{fs}	Forward Transconductance	V _{CE} = 15 V, I _C = 20 A		18		S
C _{ies}	Input Capacitance	V _{CE} = 25V, f = 1 MHz, V _{GE} = 0		1250		pF
C _{oes}	Output Capacitance			103		pF
C _{res}	Reverse Transfer Capacitance			18		pF
Q _g	Gate Charge	V _{CE} = 320V, I _C = 10 A, V _{GE} = 5V		28		nC