

T.39-31
MOS POWER 4
IGBT

SML35G60BN 600V 35A

N - CHANNEL ENHANCEMENT MODE HIGH VOLTAGE POWER INSULATED GATE BIPOLAR TRANSISTOR

MAXIMUM RATINGS

All Ratings: $T_C = 25^\circ\text{C}$ unless otherwise specified.

Symbol	Parameter	SML35G60BN	UNIT
V_{CES}	Collector-Emitter Voltage	600	Volts
V_{GE}	Gate-Emitter Voltage	± 20	
I_{C1}	Continuous Collector Current	35	Amps
I_{C2}	Continuous Collector Current @ $T_C = 100^\circ\text{C}$	20	
I_{CM}	Pulsed Collector Current ^①	70	
I_{LM}	Clamped Inductive Load Current @ $T_J = +125^\circ\text{C}$ ^②	40	
P_D	Total Power Dissipation	143	Watts
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	$^\circ\text{C}$
T_L	Max. Lead Temp. for Soldering Conditions: 0.063" from Case for 10 Sec.	300	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
BV_{CES}	Collector-Emitter Breakdown Voltage ($V_{GE} = 0\text{V}, I_C = 250\mu\text{A}$)	600			Volts
RBV_{CES}	Reverse Collector-Emitter Breakdown Voltage ($V_{GE} = 0\text{V}, I_C = -1.0\text{A}$)	-15	-25		
$V_{GE(TH)}$	Gate Threshold Voltage ($V_{CE} = V_{GE}, I_C = 1.0\text{mA}$)	2.5		5	
$V_{CE(ON)}$	Collector-Emitter On Voltage ($V_{GE} = 15\text{V}, I_C = I_{C2}$)			3.3	
I_{CES}	Collector Cut-off Current ($V_{CE} = V_{CES}, V_{GE} = 0\text{V}$)			250	μA
	Collector Cut-off Current ($V_{CE} = 0.8 V_{CES}, V_{GE} = 0\text{V}, T_C = 125^\circ\text{C}$)			1.0	mA
I_{GES}	Gate-Emitter Leakage Current ($V_{GE} = \pm 20\text{V}, V_{CE} = 0\text{V}$)			± 100	nA

THERMAL CHARACTERISTICS

Symbol	Characteristic	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to Case			0.87	$^\circ\text{C/W}$
$R_{\theta JA}$	Junction to Ambient			40	

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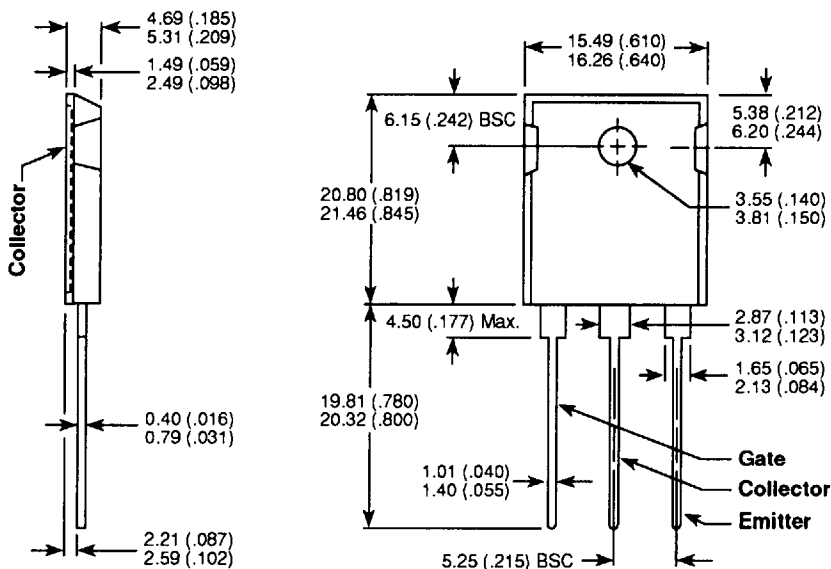
DYNAMIC CHARACTERISTICS

SML35G60BN

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
C_{ies}	Input Capacitance	$V_{GE} = 0V$ $V_{CE} = 25V$ $f = 1\text{ MHz}$			1235	pF
C_{oes}	Output Capacitance				155	
C_{res}	Reverse Transfer Capacitance				55	
Q_g	Total Gate Charge ^③	$V_{GE} = 10V$ $V_{CC} = 0.5 V_{CES}$ $I_C = I_{C1}$		38	57	nC
Q_{ge}	Gate-Emitter Charge			5	7	
Q_{gc}	Gate-Collector ("Miller") Charge			22	34	
$t_{d(on)}$	Turn-on Delay Time (Resistive Switching)	$V_{GE} = 15V$ $V_{CC} = 0.5 V_{CES}$ $I_C = I_{C2}$ $R_G = 50\Omega$		75		ns
t_r	Rise Time (Resistive Switching)			200		
$t_{d(off)}$	Turn-off Delay Time (Resistive Switching)			600		
t_f	Fall Time (Resistive Switching)			600		
$t_{d(off)}$	Turn-off Delay Time (Inductive Switching)	$V_{CLAMP(Peak)} = 0.8V_{CES}$ $V_{GE} = 15V, I_C = I_{C2}$ $R_G = 50\Omega, T_J = 125^\circ C$		750		ns
t_f	Fall Time (Inductive Switching)			600		

- ① Repetitive Rating: Pulse width limited by maximum junction temperature.
- ② $V_{CLAMP} = 0.8V_{CES}$ Volts, $R_G = 50\Omega$.
- ③ See MIL-STD-750 Method 3471

TO-247AD Package Outline



Dimensions in Millimeters and (Inches)