

Features

- Easy paralleling capability due to positive temperature coefficient in VCE_{SAT}
- Low EMI
- Low Gate Charge
- Low Saturation Voltage VCE(SAT)
- Maximum junction temperature TVJmax=175°C

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Applications

- UPS
- EV-Charger
- Solar String Inverter
- Energy Storage Inverter

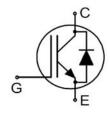


Table 1 Key Performance and Package Parameters

Туре	VCE	lc	Vce(sat) (T _{vj} = 25 °C, V _{GE} = 15 V, I _C =30A)	VF (T _{vj} = 25 °C, IF=30A)	Package	Packing
IGBT	1350 V	30 A	1.65 V	1.85 V	TO-247	30PCS

Table 2 Absolute Maximum Ratings

(TVJ = 25°C unless otherwise noted)

Parameter	Symbol	Conditions	Value	Unit	
Collector emitter voltage	Vce	_{Tvj} = 25 °C	1350	V	
	1	T _C = 25 °C	60	А	
DC collector current	lc	T _C = 100 °C	30	А	
Pulsed collector current	I _{CM}	T _C = 25 °C	90	Α	
		T _C = 25 °C	60	Α	
Maximum Diode forward current	T _C = 100 °C		30	Α	
Diode pulsed current	I _{FM}	T _C = 25 °C	90	Α	
Gate source voltage		05.00	±20	V	
Transient Gate-Emitter Voltage (tp ≤ 10µs, D < 0.010)	V _{GE}	T _{vj} = 25 °C	±30	V	
	D	T _C = 25 °C	250	W	
Power dissipation	P _{tot}	T _C = 100 °C	125		
Operating Junction Temperature Range	T _{vj}	-40	°C		
Storage Temperature Range	T_{stg}	-55 to +150			



Table 3 Thermal Resistance

Parameter	Symbol	Conditions	Max	Unit
IGBT Thermal resistance junction - case	R _{thJC}	IGBT	0.6	°C/W
Thermal resistance junction - ambient	R _{thJA}		40	°C/W

Table 4 Static Characteristics

Parameter	Symbol	Conditions	Min	Тур	Max	Unit	
Collector emitter voltage	V _{(BR)CES}	T _{vj} = 25 °C	1350	-	-	V	
Collector emitter esturation voltage	.,	$V_{GE} = 15 \text{ V}, I_{C} = 30 \text{ A}$ $T_{vj} = 25 ^{\circ}\text{C}$		1.65	1.95		
Collector emitter saturation voltage	V _{CEsat}	$V_{GE} = 15 \text{ V}, I_{C} = 30 \text{ A}$ $T_{vj} = 175 ^{\circ}\text{C}$	-	1.95	2.25	V	
Biodo formando alta na	\/_	$V_{GE} = 0 \text{ V, } I_{C} = 30 \text{ A}$ $T_{vj} = 25 \text{ °C}$		1.85	2.0		
Diode forward voltage	VF	$V_{GE} = 0 \text{ V, } I_{C} = 30 \text{ A}$ $T_{Vj} = 175 \text{ °C}$		1.95		V	
Gate-emitter threshold voltage	V _{GE(th)}	$V_{CE} = V_{GE}$, $I_C = 0.5$ mA Tvj = 25 °C	5.5	6.18	6.9	V	
Zero gate voltage collector current	I _{CES}	$V_{CE} = 1350 \text{ V}, V_{GE} = 0 \text{ V}$ $T_{vj} = 25 \text{ °C}$	-	1	100	μΑ	
Gate-emitter leakage current	I _{GES}	$V_{GE} = \pm 20 \text{ V}, V_{CE} = 0 \text{ V}$	-	ı	±200	nA	
Transconductance	G _{FS}	VGE = 15 V, Ic=20A		30		S	

Table 5 Dynamic Characteristics

Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Input capacitance	Cies	V _{GE} = 0 V	-	3800	-	
Output capacitance			-	51	-	pF
Reverse transfer capacitance	Cres	f = 1MHz	-	18	-	
Gate charge	Qg	V _{GE} = 0 V to 15 V	-	120	-	
Gate to emitter charge	Q _{ge}	I _C = 20 A	-	35	-	nC
Gate to collector charge	Qgc	V _{CE} = 600 V		51		



Table 6 Switching Characteristic (TVJ = 25° C)

Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Turn-on delay time	t _{d(on)}		-	51	-	
Rise time	t _r	N - 000 N I - 00 A	-	52	-	
Turn-off delay time	t _{d(off)}	$V_{CC} = 600 \text{ V}, I_{C} = 30 \text{ A}$ $V_{GE} = 15 \text{ V}$	-	190	-	ns
Fall time	t _f	$R_{G(on)} = 10\Omega$, $R_{G(off)} = 10\Omega$	-	152	-	
Turn-on energy	Eon		-	2.6	-	
Turn-off energy	E _{off}		-	1.3	-	mJ
Total switching energy	E _{ts}		-	3.9	-	

Table 7 Diode Recovery Characteristics

Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Reverse recovery time	T_{rr}		-	330	-	ns
Reverse recovery charge	Qrr	$V_R = 600 \text{ V}, I_F = 30 \text{ A}, \text{ di/dt} = 600 \text{ A/}\mu\text{S}$	-	2.0	-	μC
Peak reverse recovery current	I _{rrm}		-	12	-	Α



Typical Characteristics

Fig.1 Typical Output characteristics (25°C)

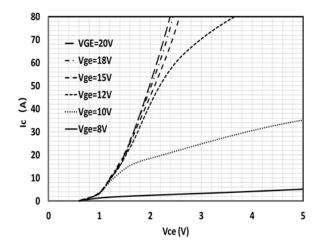


Fig.3 Forward Bias Safe Operating Area

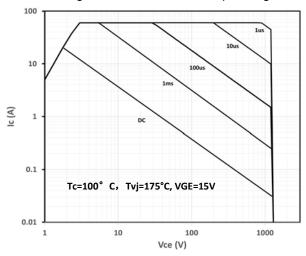


Fig.5 Gate charge

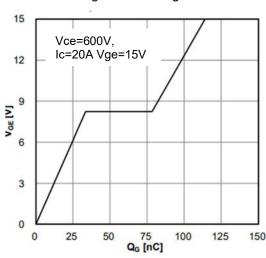


Fig.2 Typical Output characteristics (175°C)

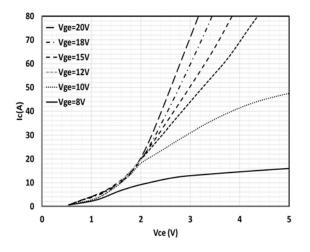


Fig.4 Transfer characteristics

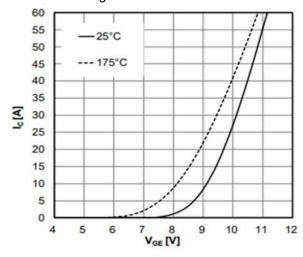


Fig.6 Typical capacitance

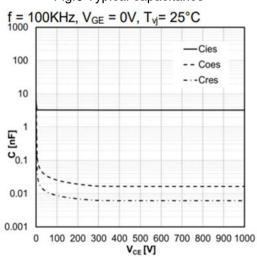


Fig.7 Vcesat vs. Junction Temperature

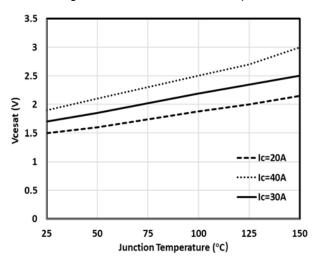


Fig.9 Threshold voltage vs. Junction temperature

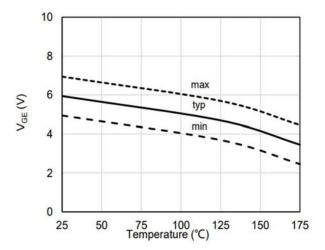


Fig.11 Switching Energy Loss vs. Rg

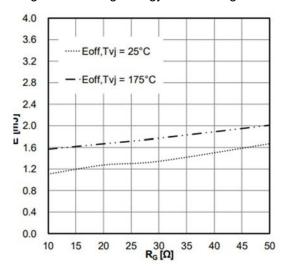


Fig.8 Typical diode VF vs. IF Characteristic

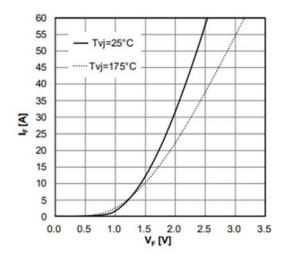


Fig.10 Switching Energy Loss vs. collector current

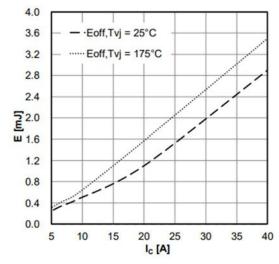
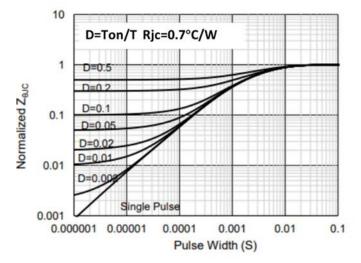
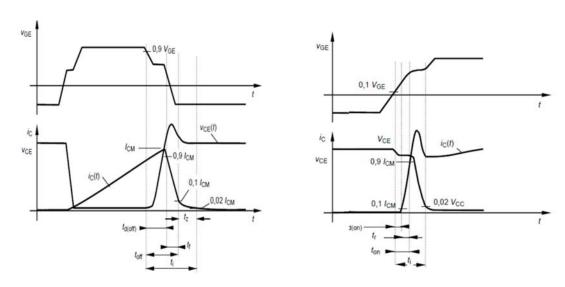


Fig.12 Transient Thermal Impedance IGBT

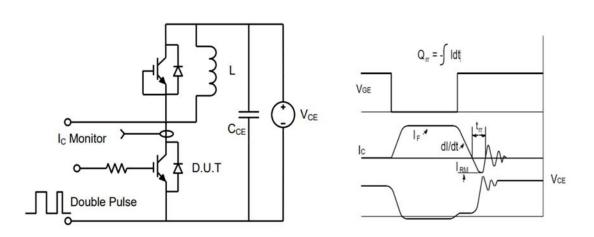




Switching Test Circuit & Waveforms

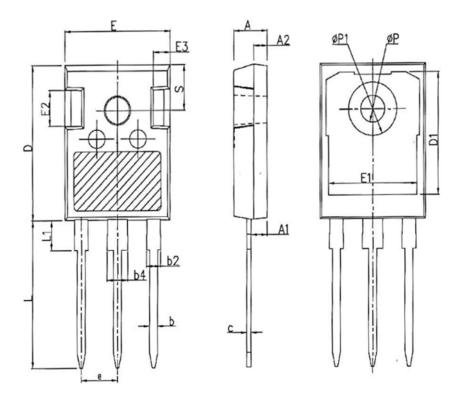


Diode Recovery Test Circuit & Waveforms





Package Outline



CAMBOI	mm						
SYMBOL	MIN	MOM	MAX				
A	4.80	5.00	5. 20				
A1	2.21	2.41	2. 59				
A2	1.85	2.00	2. 15				
b	1.11	1.21	1.36				
b2	1.91	2.01	2. 21				
b4	2.91	3.01	3. 21				
С	0.51	0.61	0.75				
D	20.70	21.00	21.30				
D1	16. 25	16.55	16.85				
E	15. 50	15.80	16. 10				
E1	13.00	13.30	13.60				
E2	4.80	5.00	5. 20				
E3	2.30	2.50	2.70				
е	5. 44BSC						
L	19. 62	19.92	20. 22				
L1	-	-	4.30				
ФР	3.40	3.60	3. 80				
ФР1	-	-	7.30				
S	6. 15BSC						



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