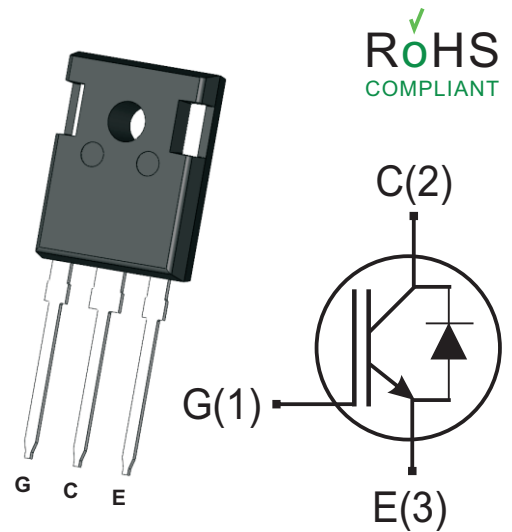




1350V,20A,Field Stop , IGBT

TO-247-3L (*Prefix :W)

V _{CES}	1350V
I _c (T _c 100°C)	20A
V _{CE(sat)} (typ)	1.65V



ROHS
COMPLIANT

DESCRIPTION

- Positive temperature coefficient
- Low saturation voltage
- Has low conduction loss and switching loss
- Easy paralleling
- Rohs Compliant

APPLICATIONS

- Motor drives
- Inverters
- Uninterruptible Power Supplies
- Converters

SYMBOL

ABSOLUTE MAXIMUM RATINGS (TA=25°C, unless otherwise specified)

PARAMETER	Symbols	RATINGS	Units
Collector-Emitter Breakdown Voltage	V _{CE}	1350	V
Continuous Gate-Emitter Voltage	V _{GE}	±20	V
DC Collector Current, limited by T _{jmax}	I _c	T _c =25°C	40
		T _c =100°C	20
Pulsed Collector Current	I _{CM}	120	A
Diode Forward Current, limited by T _{jmax}	I _F	20	A
Power Dissipation (T _c = 25°C)	P _D	250	W
Operating junction temperature	T _j	-55 ~ +150	°C
storage temperature	T _{stg}	-55 ~ +150	°C

Thermal Resistance

PARAMETER	Symbols	RATINGS	Units
Thermal resistance IGBT junction – case.	R _{thJC}	0.5	°C/W
Thermal resistance Diode junction – case.	R _{thJC}	0.41	°C/W
Thermal resistance, junction – ambient	R _{thJA}	40	°C/W



Electrical Characteristics of the IGBT (Tj= 25°C unless otherwise specified)

PARAMETER	Symbols	TEST CONDITIONS	Min	Typ	Max	Units
Static						
Collector-emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0V, I_{CE}=0.25mA$	1350			V
Zero gate voltage collector current	I_{CES}	$V_{CE}=1350V, V_{GE}=0V$			10	μA
Gate-emitter leakage current	I_{GES}	$V_{GE}=\pm 20V, V_{CE}=0V$			± 100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=20A$		1.65	2.3	V
Gate-emitter threshold voltage	$V_{GE(TH)}$	$V_{GE}=V_{CE}, I_C=1mA$	3.5	5.8	7.5	V
Dynamic						
Input Capacitance	C_{ies}	$V_{CE}=25V,$		6840		μF
Output Capacitance	C_{oes}	$V_{GE}=0V,$		203		μF
Reverse Transfer Capacitance	C_{res}	$f=1.0MHz$		56		μF
Gate resistance	R_G	$V_{DS}=0V, F_{REQ}=1.00MHz$		1.0		Ω

Electrical Characteristics of the Diode (Tj= 25°C unless otherwise specified)

PARAMETER	Symbols	TEST CONDITIONS	Min	Typ	Max	Units
Static						
Diode Forward Voltage	V_F	$V_{GE}=0V, I_F=20A$		1.15	1.3	V
Dynamic						
Diode reverse recovery time	TRR	$I_F=0.5A, I_R=1.0A$ $I_{rr}=0.25A$			1000	ns

Switching Characteristic, Inductive Load

PARAMETER	Symbols	TEST CONDITIONS	Min	Typ	Max	Units
Dynamic						
Turn-on Delay Time	$t_{d(on)}$	$V_{CC}= 600V, I_C=20A,$ $V_{GE}= -15V\sim 15V,$ $R_g=12\Omega$		35		ns
Rise Time	t_r			36		ns
Turn-on Energy	E_{on}			2.2		mJ
Turn-off Delay Time	$t_{d(off)}$			190		ns
Fall Time	t_f			90		ns
Turn-off Energy	E_{off}			0.8		mJ



Typical Characteristics

Fig.1 Typical output characteristic

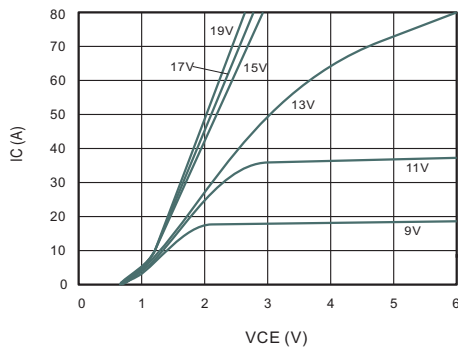


Fig.2 Capacitance Characteristics

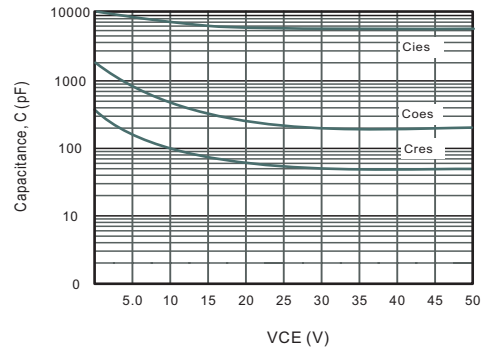


Fig.3 Power Dissipation

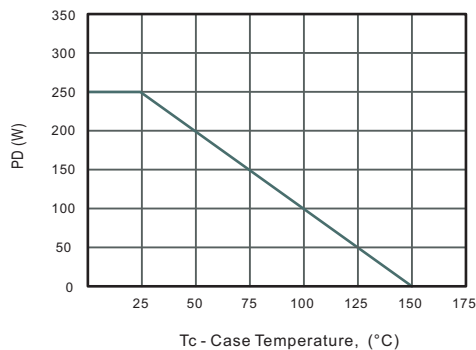


Fig.4 Collector Current Derating

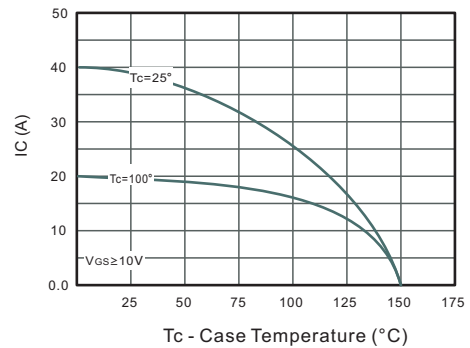


Fig.5 Max. Transient Thermal Impedance-IGBT

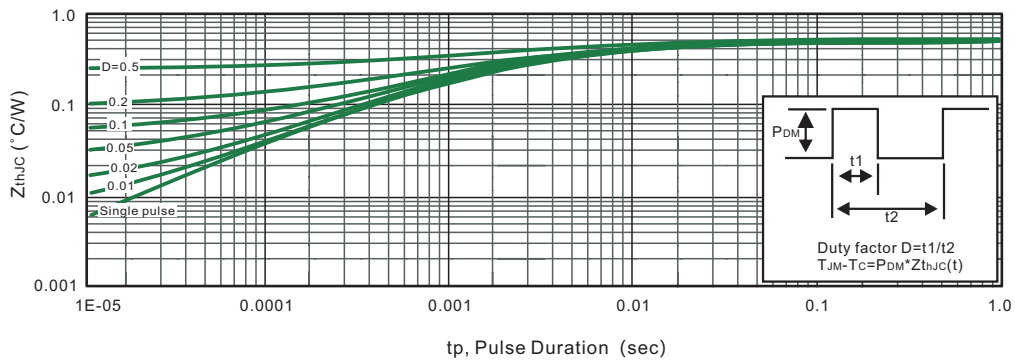
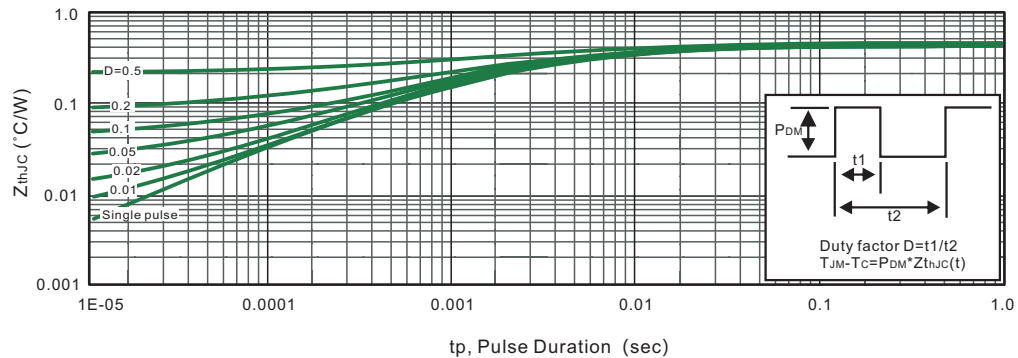


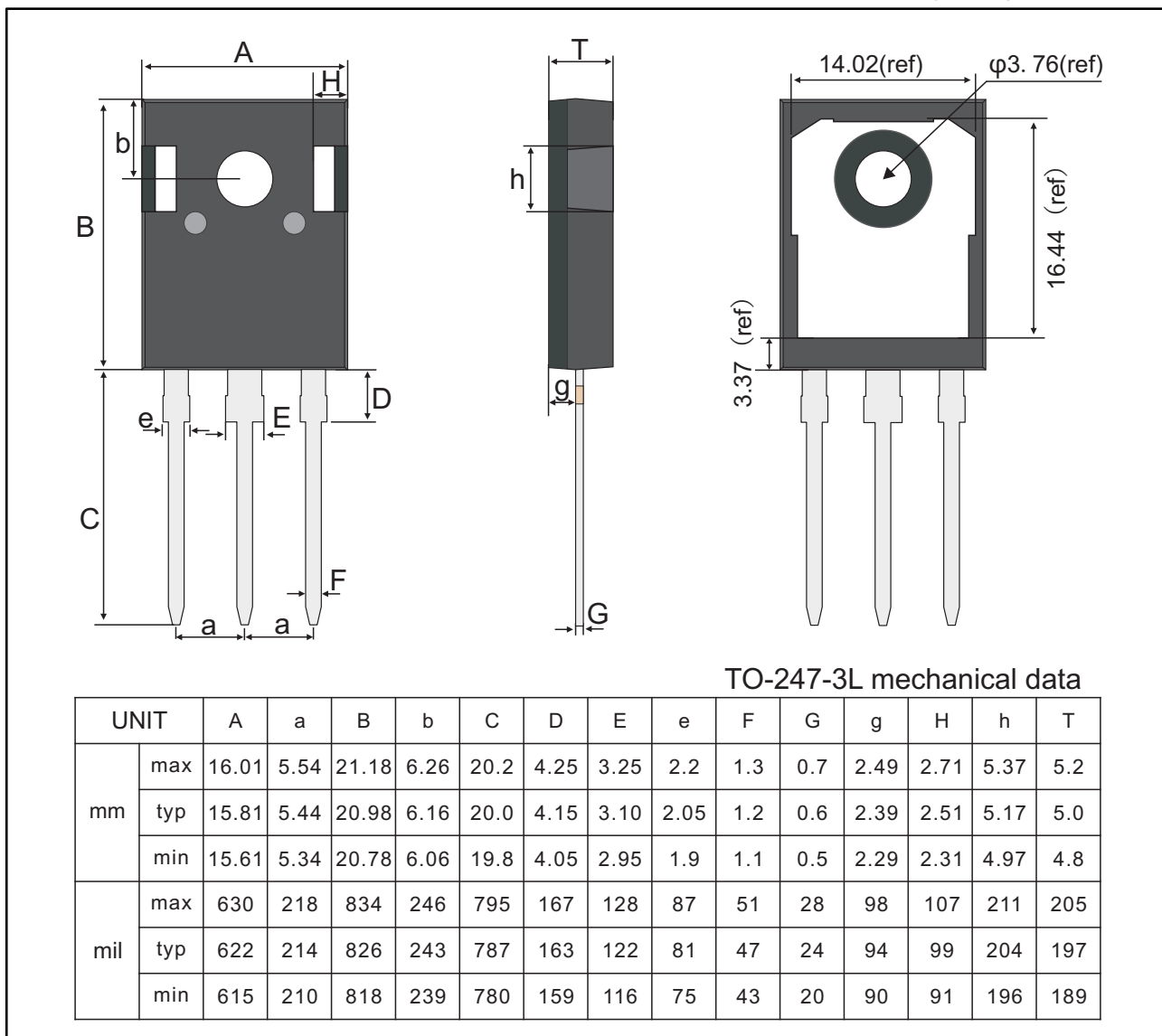
Fig.6 Max. Transient Thermal Impedance-Diode





Package Outline
Through Hole Package ; 3 leads

TO-247-3L



Marking

Type number	Marking code
GW20ND135ST	GW20ND135ST



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