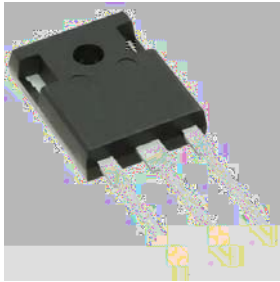


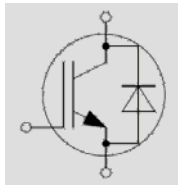


DGW25N120CTL



IGBT Discrete

Circuit



Applications

- Inverter for motor drive
- AC and DC servo drive amplifier
-

Features

- Low $V_{CE(sat)}$ Trench-FS IGBT technology
- Maximum junction temperature 175
- Positive temperature coefficient
- Including fast & soft recovery anti-parallel FWD
- High short circuit capability(10us)

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Emitter Breakdown Voltage	V_{CE}	1200	V
DC Collector Current, $T_c = 25^\circ\text{C}$	$I_{C\text{max}}$	50	A

$T_c = 25^\circ\text{C}$ $T_c = 100^\circ\text{C}$	I_F	50 25	A
Continuous Gate-Emitter Voltage	V_{GE}	± 20	V
Transient Gate-Emitter Voltage	V_{GE}	± 30	V
Turn off Safe Operating Area $V_{CE} \leq 1200\text{V}$, $T_j \leq 150^\circ\text{C}$		100	A
Pulsed Collector Current, $V_{GE} = 15\text{V}$, tp limited by $T_{j\text{max}}$	I_{CM}	100	A
Diode Pulsed Current, tp limited by $T_{j\text{max}}$	$I_{F\text{puls}}$	100	A
Short Circuit Withstand Time, $V_{GE} = 15\text{V}$, $V_{CC} = 900\text{V}$ $V_{CEM} \leq 1200\text{V}$	T_{sc}	10	μs
Power Dissipation, $T_j = 175^\circ\text{C}$, $T_c = 25^\circ\text{C}$	P_{tot}	326	W
Operating Junction Temperature	T_j	$-40 \dots +175$	$^\circ\text{C}$
Storage Temperature	T_s	$-55 \dots +150$	$^\circ\text{C}$
Soldering Temperature, wave soldering 1.6mm (0.063in.) from case for 10s		260	$^\circ\text{C}$



DGW25N120CTL

■Electrical Characteristics of the IGBT $T_j = 25$ unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Collector-Emitter Breakdown Voltage	BV_{CES}	$V_{GE}=0V, I_C=250\mu A$	1200		-	V
Gate Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=0.8mA$	5.1	5.8	6.4	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=25A$ $T_j=25^\circ C,$ $T_j=125^\circ C$ $T_j=150^\circ C$		1.85 2.20 2.30	2.35	V
Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V$ $T_j=25^\circ C,$ $T_j=150^\circ C$			0.25 5.00	mA
Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0V, V_{GE}=\pm 20V$			100	nA

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic						
Input Capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V,$ $f=1MHz$	-	1.45	-	nF
Reverse Transfer Capacitance	C_{res}		-	0.05	-	
Gate Charge	Q_G	$V_{CC}=960V, I_C=25A, V_{GE}=15V$	-	0.20	-	μC
Short Circuit Collector Current	I_{SC}	$V_{GE}=15V, t_{sc}\leq 10\mu s,$ $V_{CC}=900V, T_j\leq 150^\circ C$	-	110	-	A

Operating Junction Temperature	T_j	-40...+175	$^\circ C$
Storage Temperature	T_s	-55...+150	$^\circ C$
Soldering Temperature, wave soldering 1.6mm (0.063in.) from case for 10s		260	$^\circ C$



DGW25N120CTL

■Electrical Characteristics of the Diode $T_J = 25$ unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Diode Forward Voltage	V_F	$I_F = 25A$ $T_J = 25^{\circ}C$, $T_J = 125^{\circ}C$ $T_J = 150^{\circ}C$		2.00 1.80 1.70		V

■Switching Characteristic, Inductive Load

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
						ns
						ns



DGW25N120CTL

■Electrical Characteristics of the DIODE

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Dynamic , at $T_j = 25$;						
Diode Forward Voltage	V_{FM}	$I_F = 25A$	-	2.10	-	V
Reverse Recovery Current	I_{rr} f	$I_F = 25A, V_R = 600V, \frac{dI_F}{dt} = 1700A/\mu s$	-	48.5	-	A
Reverse Recovery Charge	Q_{rr}	$I_F = 25A, V_R = 600V, \frac{dI_F}{dt} = 1700A/\mu s$	-48.5	2.52	-	uC
Reverse Recovery Energy	Erec		-	0.94		mJ
Dynamic , at $T_j = 125$						

Reverse Recovery Current I_{rr}



DGW25N120CTL

$T_{vj}=25$

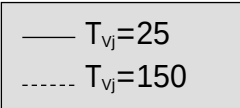
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$T_{vj}=150$

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DGW25N120CTL





DGW25N120CTL

$V_{CC}=600V$
 $R_G=18\Omega$
 $V_{GE}=\pm 15V$
 $T_{vj}=150$

$V_{CC}=600V$
 $I_F=25A$
 $V_{GE}=\pm 15V$
 $T_{vj}=150$

i:	1	2	3	4
$r_i[K/W]$	0.0840	0.1780	0.4100	0.3270
$\epsilon_i[s]$	0.0723	0.00813	0.00109	0.000155

DGW25N120CTL

■Circuit Diagram

■Package Outline Information

CASE: TO 247

