

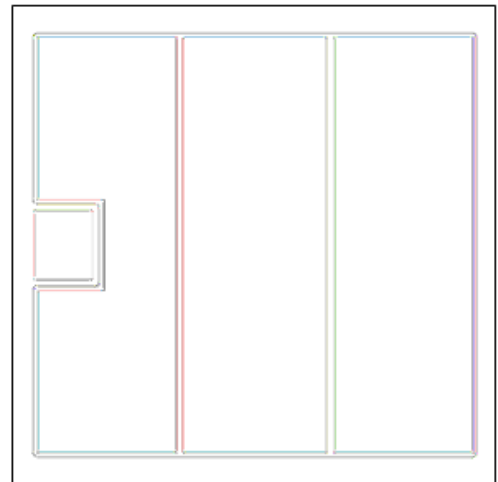
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$V_{CES} = 750 \text{ V}$
 $I_C = \text{Limited by } T_{j(\text{max})}$

IGBT DIE



DIODE OUTLINE



ORDERING INFORMATION

Device	Inking?	Shipping
NCG225L75NF8M1	Yes	Sawn Wafer on Tape

NCG225L75NF8M1

ABSOLUTE MAXIMUM RATINGS (T_{VJ} = 25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Collector Emitter Voltage	V _{CES}	750	V
Gate Emitter Voltage	V _{GES}	±20	V
DC Collector Current, Limited by T _{VJ} max	I _C	(Note 1)	A
Pulsed Collector Current, V _{GE} = 15 V, tp Limited by T _{VJ} max (Note 2)	I _{CM}	675	A
Short Circuit Withstand Time, V _{GE} = 15 V, V _{CE} ≤ 400 V, T _{VJ} ≤ 175°C	t _{sc}	4	μs
Operating Junction Temperature	T _{VJ}	40 to +175	°C
Storage Temperature Range	T _{stg}	+18 to +28	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Depends on the thermal properties of assembly.
2. Not subject to production test – verified by design/characterization.

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
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STATIC CHARACTERISTICS (Tested on Wafers)

Collector Emitter Breakdown Voltage	BV _{CES}	V _{GE} = 0 V, I _C = 1 mA	750			V
Collector Emitter Saturation Voltage	V _{CE(SAT)}	I _C = 200 A, V _{GE} = 15 V		1.30	1.75	V
Gate Emitter Threshold Voltage	V _{GE(th)}	V _{GE} = V _{CE} , I _C = 200 mA	4.8	6.0	7.2	V
Collector Cut off Current	I _{CES}	V _{CE} = V _{CES} , V _{GE} = 0 V			40	μA
Gate Leakage Current	I _{GES}	V _{GE} = V _{GES} , V _{CE} = 0 V			±600	nA

ELECTRICAL CHARACTERISTICS (Not Subjected to Production Test – Verified by Design/Characterization)

Collector Emitter Breakdown Voltage	BV _{CES}	V _{GE} = 0V, I _C = 1 mA	T _{VJ} = 40°C	700	810		V
Collector Cut off Current	I _{CES}	V _{CE} = V _{CES} , V _{GE} = 0 V	T _{VJ} = 150°C		0.2		mA
			T _{VJ} = 175°C		1.5		mA
Collector Emitter Saturation Voltage	V _{CE(SAT)}	I _C = 225 A, V _{GE} = 15 V	T _{VJ} = 150°C		1.65		V
			T _{VJ} = 175°C		1.75		V
Input Capacitance	C _{IES}	V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz			21000		pF
Output Capacitance	C _{OES}				370		pF
Reverse Transfer Capacitance	C _{RES}				83		pF
Internal Gate Resistance	R _G	f = 1 MHz			2.3		Ω
Total Gate Charge	Q _{G(Total)}	V _{CE} = 400 V, I _C = 225 A, V _{GE} = 8 V to +15 V			690		nC
Gate Emitter Charge	Q _{GE}				360		nC
Gate Collector Charge	Q _{GC}				158		nC
Turn On Delay Time	t _{d(on)}	V _{CE} = 400 V, I _C = 225 A, R _G = 2 Ω, V _{GE} = +15/ 8 V, Inductive Load, T _{VJ} = 25°C			104		ns
Rise Time	t _r				364		ns
Turn Off Delay Time	t _{d(off)}				122		ns
Fall Time	t _f				176		ns
Turn On Delay Time	t _{d(on)}	V _{CE} = 400 V, I _C = 225 A, R _G = 2 Ω, V _{GE} = +15/ 8 V, Inductive Load, T _{VJ} = 150°C			112		ns
Rise Time	t _r				356		ns
Turn Off Delay Time	t _{d(off)}				130		ns
Fall Time	t _f				270		ns

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ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise specified) (continued)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
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ELECTRICAL CHARACTERISTICS (Not Subjected to Production Test – Verified by Design/Characterization)

Turn On Delay Time	$t_{d(on)}$	V_{CE}				
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