

NTC080N120SC1

Figure 1. Bare Die Dimensions

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MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Parameter		Symbol	Value	Unit	
Drain-to-Source Voltage		V _{DSS}	1200	V	
Gate-to-Source Voltage		V _{GS}	-15/+25	V	
Recommended Operation Values of Gate-to-Source Voltage	T _C < 175°C	V _{GSop}	-5/+20	V	
Continuous Drain Current R _{θJC}	Steady State T _C = 25°C	I _D	31	A	
Power Dissipation R _{θJC}		P _D	178	W	
Continuous Drain Current R _{θJC}	Steady State T _C = 100°C	I _D	22	A	
Power Dissipation R _{θJC}		P _D	89	W	
Pulsed Drain Current (Note 2)	T _C = 25°C		I _{DM}	132	A
Single Pulse Surge Drain Current Capability	T _C = 25°C, t _p = 10 μs, R _G = 4.7 Ω		I _{DSC}	132	AT
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to +175	°C	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 1 mA	1200	-	-	V
Drain-to-Source Breakdown Voltage Temperature Coefficient	V _{(BR)DSS} /T _J	I _D = 1 mA, referenced to 25°C	-	700	-	mV/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} = 0 V, V _{DS} = 1200 V, T _J = 25°C	-	-	100	μA
		V _{GS} = 0 V, V _{DS} = 1200 V, T _J = 175°C	-	-	250	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} = +25/-15 V, V _{DS} = 0 V	-	-	±1	μA

ON CHARACTERISTICS

Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D = 5 mA	1.8	2.7	4.3	V
Recommended Gate Voltage	V _{GOP}		-5	-	+20	V
Drain-to-Source On Resistance	R _{DS(on)}	V _{GS} = 20 V, I _D = 20 A, T _J = 25°C	-	80	110	mΩ
		V _{GS} = 20 V, I _D = 20 A, T _J = 150°C	-	114	-	
Forward Transconductance	g _{FS}	V _{DS} = 20 V, I _D = 20 A	-	13	-	S

CHARGES, CAPACITANCES & GATE RESISTANCE

Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1 MHz, V _{DS} = 800 V	-	1112	-	pF
Output Capacitance	C _{OSS}		-	80	-	
Reverse Transfer Capacitance	C _{RSS}		-	6.5	-	
Total Gate Charge	Q _{G(tot)}	V _{GS} = -5/20 V, V _{DS} = 600 V, I _D = 20 A	-	56	-	nC
Gate-to-Source Charge	Q _{GS}		-	11	-	
Gate-to-Drain Charge	Q _{GD}		-	12	-	
Gate Resistance	R _G	f = 1 MHz	-	1.7	-	Ω

SWITCHING CHARACTERISTICS

Turn-On Delay Time	t _{d(on)}	V _{GS} = -5/20 V, V _{DS} = 800 V, I _D = 20 A, R _G = 4.7 Ω, Inductive Load	-	13	-	ns
Rise Time	t _r		-	20	-	
Turn-Off Delay Time	t _{d(off)}		-	22	-	
Fall Time	t _f		-	10	-	
Turn-On Switching Loss	E _{ON}		-	258	-	μJ
Turn-Off Switching Loss	E _{OFF}		-	52	-	
Total Switching Loss	E _{TOT}		-	311	-	

DRAIN-SOURCE DIODE CHARACTERISTICS

Continuous Drain-to-Source Diode Forward Current	I _{SD}	V _{GS} = -5 V	-	-	18	A
Pulsed Drain-to-Source Diode Forward Current (Note 2)	I _{SDM}	V _{GS} = -5 V	-	-	132	A
Forward Diode Voltage	V _{SD}	V _{GS} = -5 V, I _{SD} = 10 A	-	4	-	V
Reverse Recovery Time	t _{RR}	V _{GS} = -5/20 V, I _{SD} = 20 A, dI _S /dt = 1000 A/μs	-	16	-	ns
Reverse Recovery Charge	Q _{RR}		-	62	-	nC
Reverse Recovery Energy	E _{REC}		-	5	-	μJ
Peak Reverse Recovery Current	I _{RRM}		-	8	-	A

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

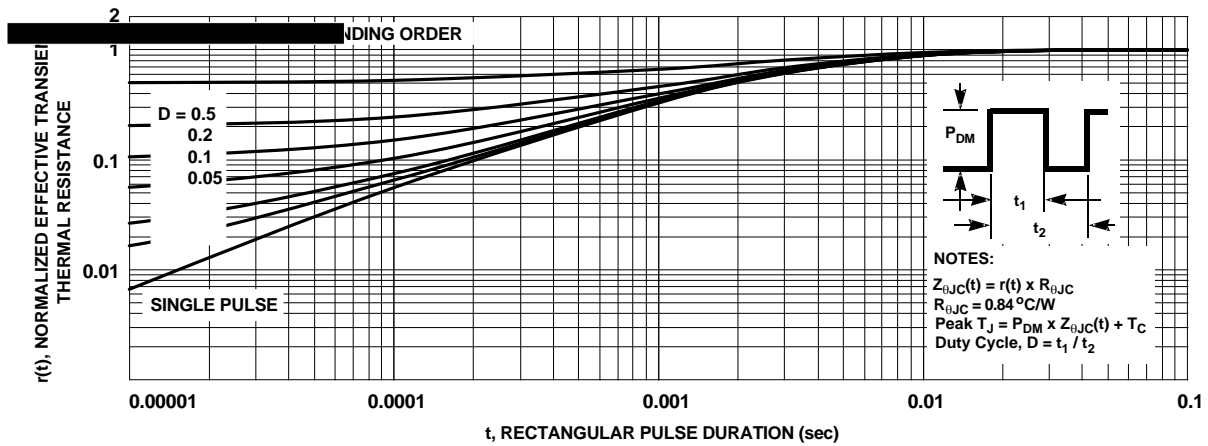


Figure 14. Junction-to-Case Transient Thermal Response Curve

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