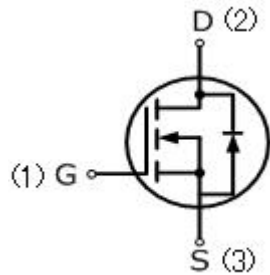


24N90Y

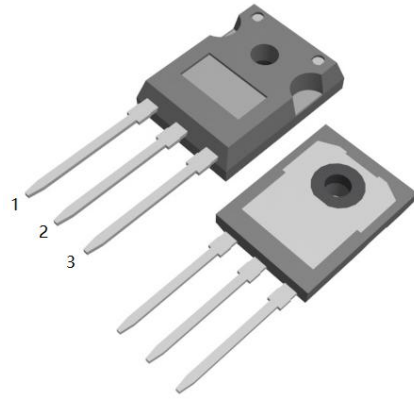
24Amps,900 Volts N-CHANNEL Power MOSFET

FEATURE

- 24A,900V, $R_{DS(ON)MAX}=0.42\Omega@V_{GS}=10V12A$
- Low gate charge
- Low C_{iss}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS 2.0 Compliant



TO-247-3L



Absolute Maximum Ratings ($T_C=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	24N90Y	UNIT
Drain-Source Voltage	V_{DSS}	900	V
Gate-Source Voltage	V_{GS}	± 30	
Continuous Drain Current	I_D	24	A
Pulsed Drain Current(Note1)	I_{DM}	96	
Single Pulse Avalanche Energy (Note 2)	E_{AS}	2600	mJ
Reverse Diode dV/dt (Note 3)	dv/dt	5	V/ns
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55to+150	$^\circ\text{C}$
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	T_L	260	$^\circ\text{C}$

Parameter	Symbol	24N90Y	Units
Thermal resistance , Channel to Case	$R_{th(ch-c)}$	0.19	$^\circ\text{C}/\text{W}$
Maximum Power Dissipation	P_D	660	W

Electrical Characteristics (T_c=25°C, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	900	—	—	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =900V, V _{GS} =0V	—	—	5	uA
Gate-Body Leakage Current, Forward	I _{GSSF}	V _{GS} =30V, V _{DS} =0V	—	—	100	nA
Gate-Body Leakage Current, Reverse	I _{GSSR}	V _{GS} =-30V, V _{DS} =0V	—	—	-100	nA
On Characteristics						
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2.5	—	4.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =12A	—	0.32	0.42	Ω
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHZ	—	7500	—	pF
Output Capacitance	C _{oss}		—	600	—	pF
Reverse Transfer Capacitance	C _{rss}		—	100	—	pF
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =450V, I _D =12A, R _G =10Ω	—	60	—	ns
Turn-On Rise Time	t _r		—	150	—	ns
Turn-Off Delay Time	t _{d(off)}		—	80	—	ns
Turn-Off Fall Time	t _f		—	120	—	ns
Total Gate Charge	Q _g	V _{DS} =450V, I _D =12A, V _{GS} =0 to 10V	—	183	—	nC
Gate-Source Charge	Q _{gs}		—	45	—	nC
Gate-Drain Charge	Q _{gd}		—	62	—	nC
Drain-Source Body Diode Characteristics and Maximum Ratings						
Continuous Diode Forward Current	I _S		—	—	24	A
Pulsed Diode Forward Current	I _{SM}		—	—	96	A
Diode Forward Voltage	V _{SD}	I _S =24A, V _{GS} =0V	—	—	1.5	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _S =24A, dI _F /dt=100A/us, (Note3)	—	900	—	ns
Reverse Recovery Charge	Q _{rr}		—	2.0	—	uC

Notes

1. Repetitive Rating: pulse width limited by maximum junction temperature.
2. V_{DD}=50V, L=10mH, R_g=25 Ω, starting T_J=25°C.
3. Pulse width ≤ 300us; duty cycle ≤ 2%.

RATING AND CHARACTERISTIC CURVES



Peak Diode Recovery dv/dt Test Circuit



Peak Diode Recovery dv/dt Waveforms



Switching Test Circuit



Switching Waveforms



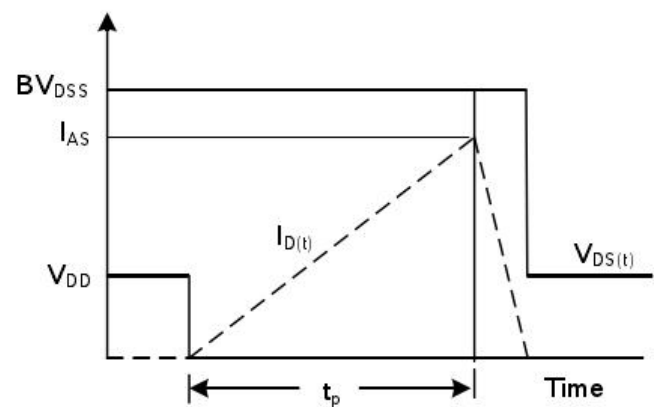
Gate Charge Test Circuit



Gate Charge Waveform

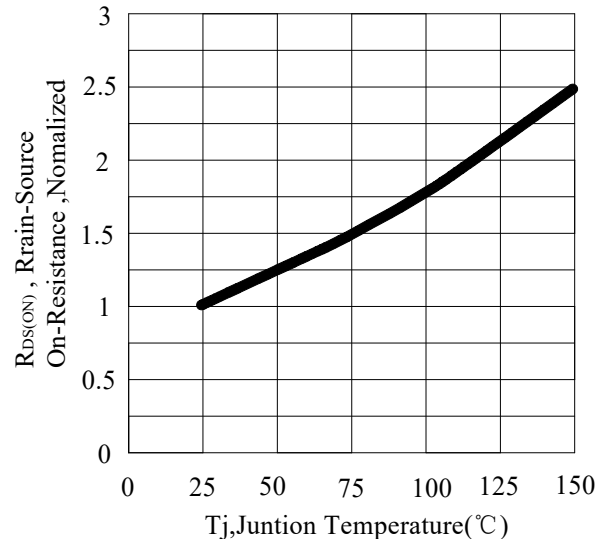
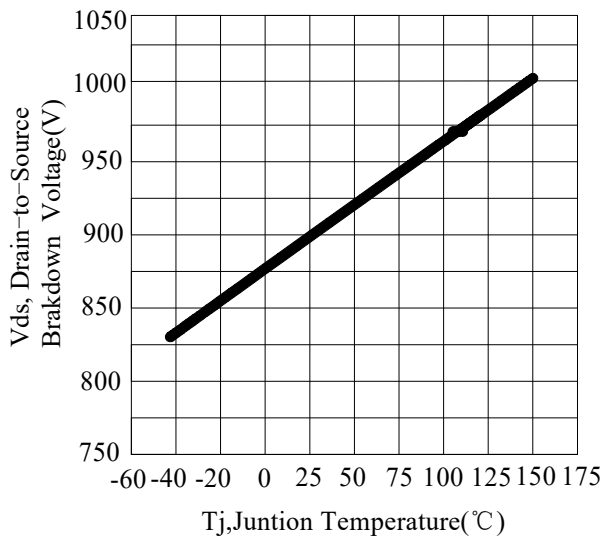
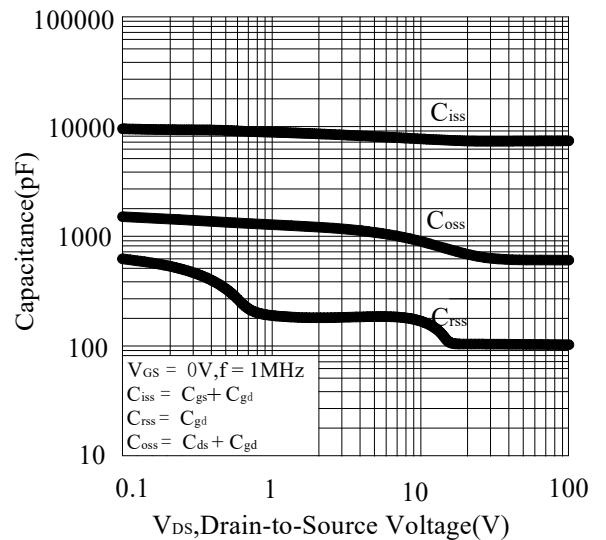
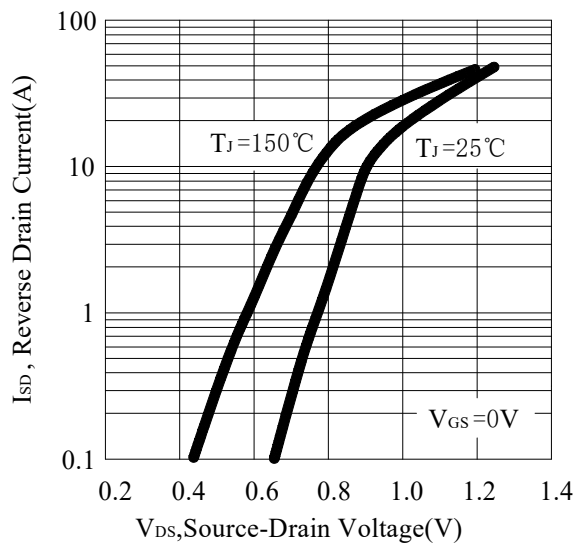
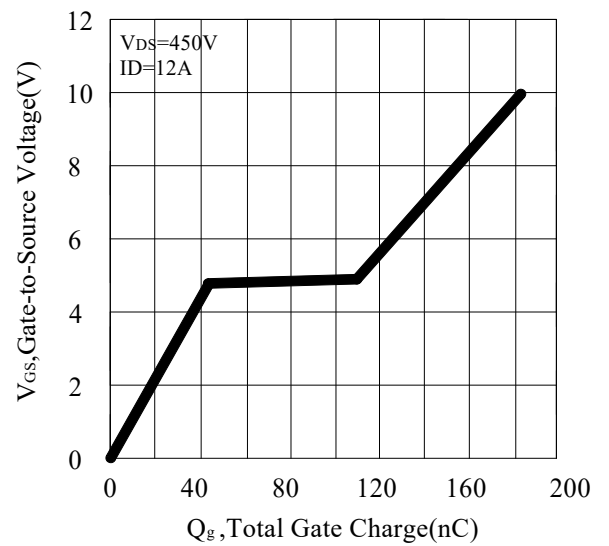
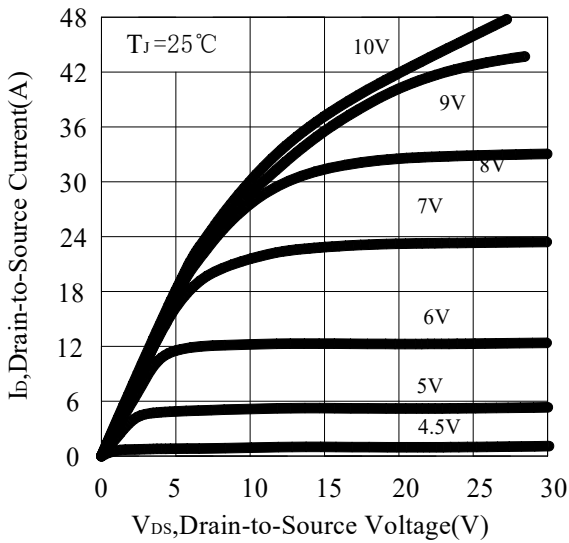


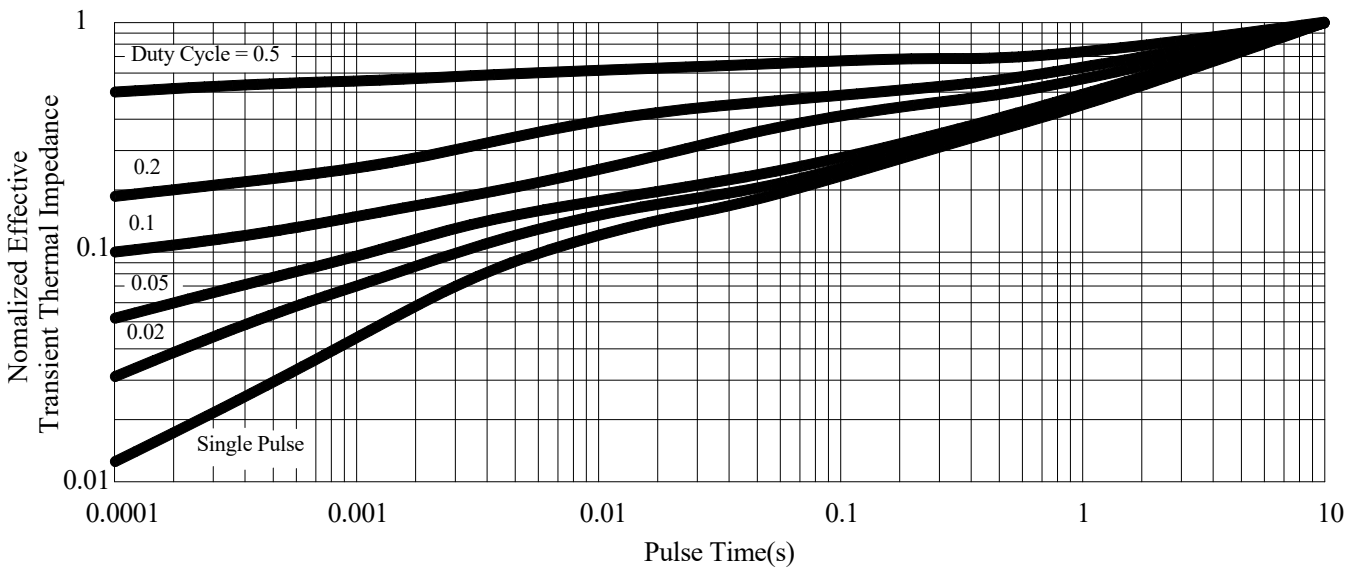
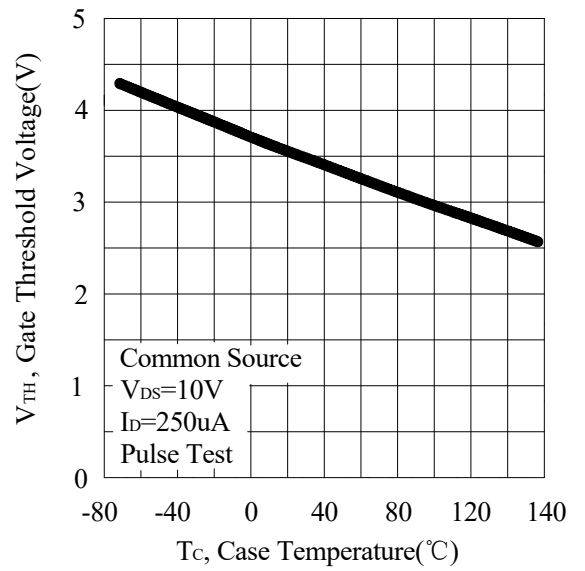
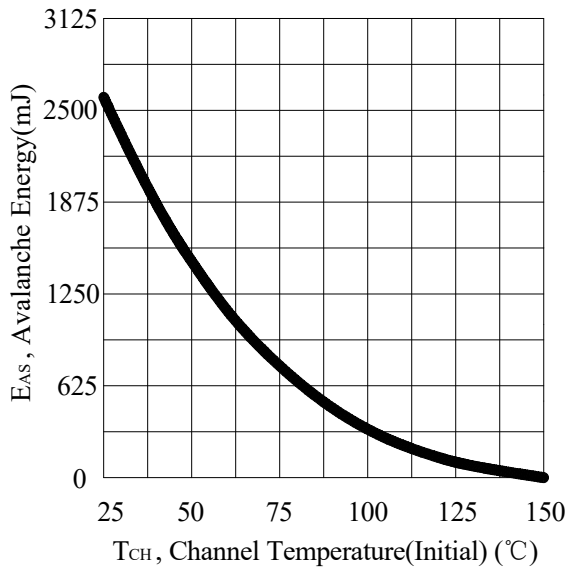
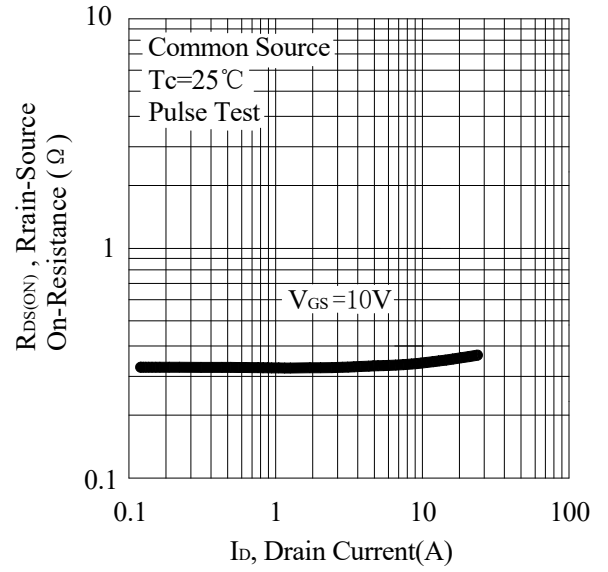
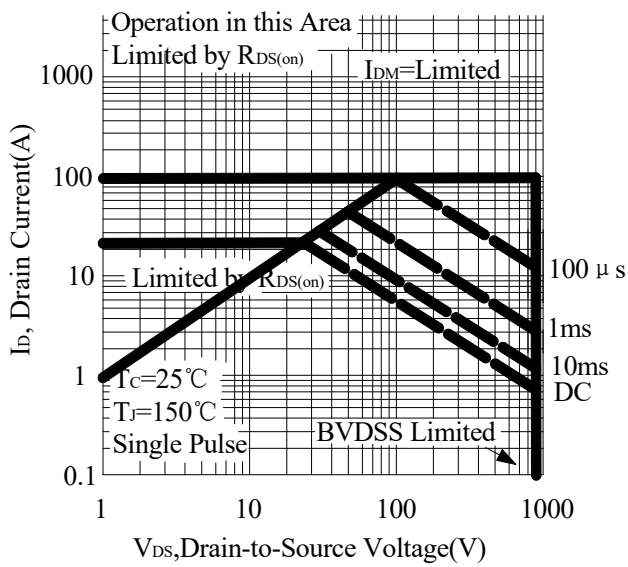
Unclamped Inductive Switching Test Circuit



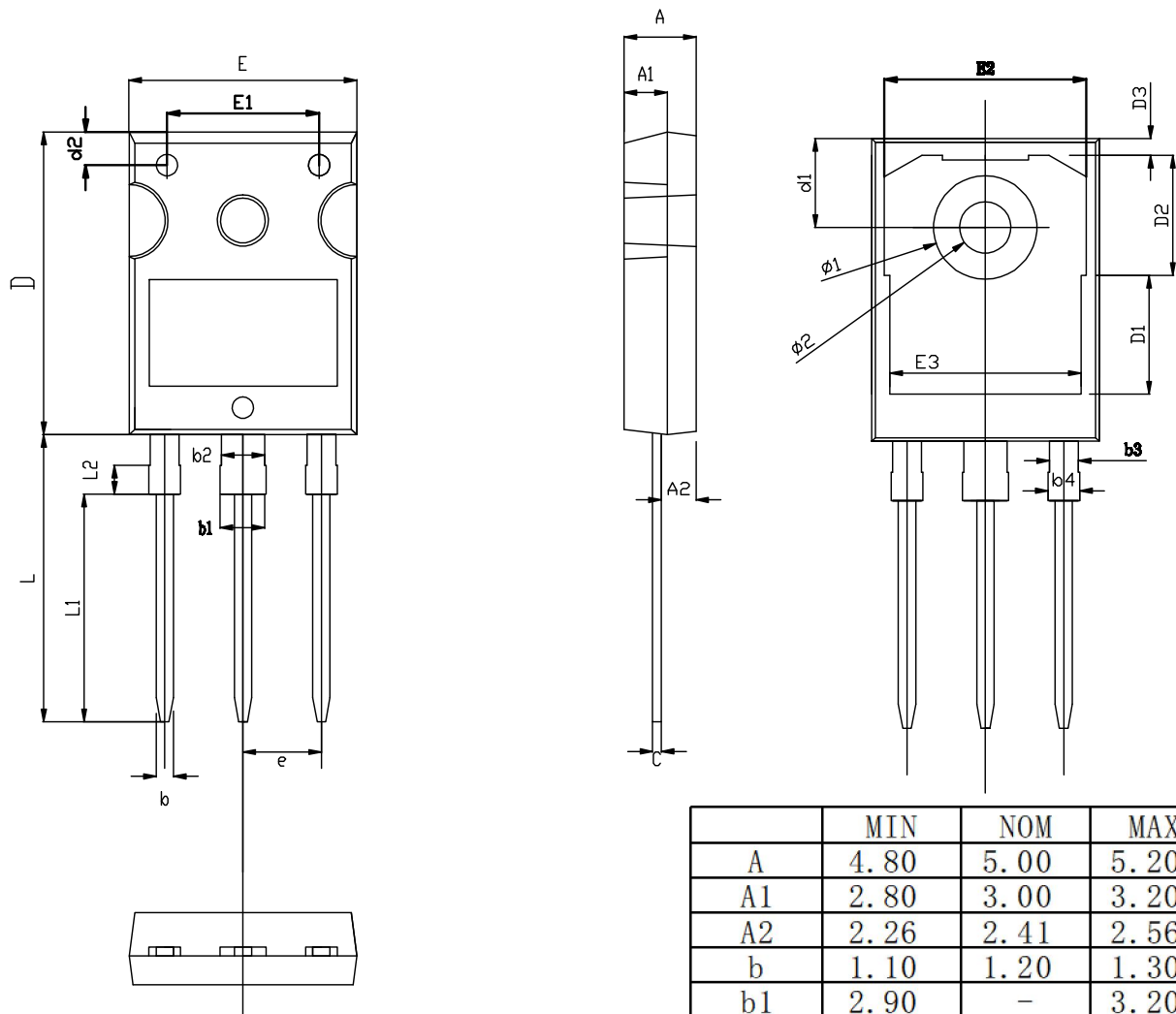
Unclamped Inductive Switching Waveforms

RATING AND CHARACTERISTIC CURVES

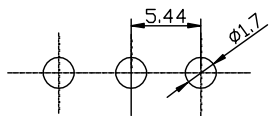




TO-247-3L PACKAGE OUTLINE



RECOMMENDED LAND PATTERN



UNIT: mm

	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.80	3.00	3.20
A2	2.26	2.41	2.56
b	1.10	1.20	1.30
b1	2.90	-	3.20
b2	2.90	3.00	3.10
b3	1.90	2.00	2.10
b4	2.00	-	2.20
c	0.50	0.60	0.70
D	20.80	21.00	21.20
D1		8.23	
D2		8.32	
D3		1.17	
d1	6.00	6.15	6.30
d2	2.20	2.30	2.40
E	15.60	15.80	16.00
E1		10.50	
E2		14.02	
E3		13.50	
e	5.34	5.44	5.54
L	19.72	19.92	20.12
L1		15.79	
L2		1.98	
$\phi 1$	7.10	7.19	7.30
$\phi 2$	3.50	3.60	3.70