Ordering number : ENA2235

NDTL03N150C

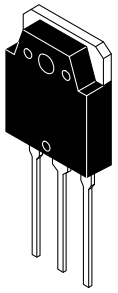
N-Channel Power MOSFET
1500V, 2.5A, 10.5Ω, TO-3P-3L

ON Semiconductor®

http://onsemi.com

Features

- On-resistance $R_{DS}(on)$=8Ω(typ.)
- Input Capacitance Ciss=650pF(typ.)
- 10V drive



TO-3P-3L

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain to Source Voltage	V_{DSS}		1500	V
Gate to Source Voltage	V_{GSS}		±30	V
Drain Current (DC)	I_D		2.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	5	A
Allowable Power Dissipation	P_D		2.5	W
		Tc=25°C	140	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		- 55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		34	mJ
Avalanche Current *2	I_{AV}		2.5	A

*1 V_{DD}=50V, L=10mH, I_{AV}=2.5A (Fig.1)

*2 L≤10mH, Single Pulse

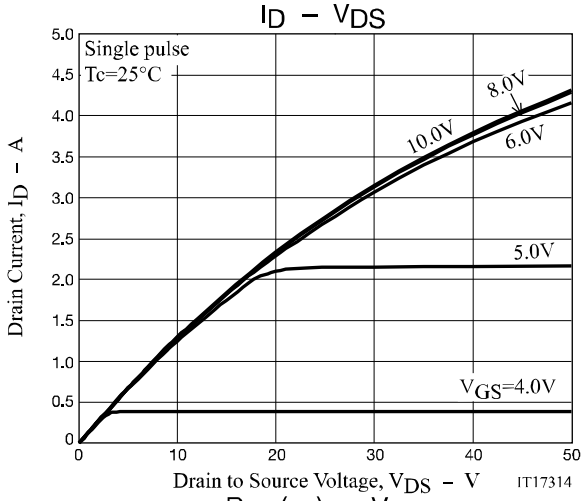
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

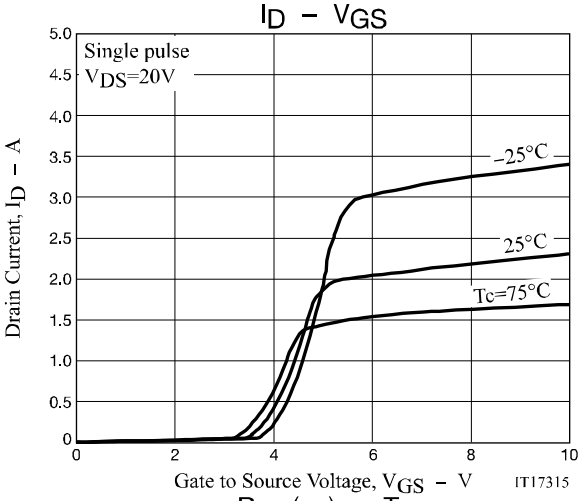
Electrical Characteristics at Ta = 25°C

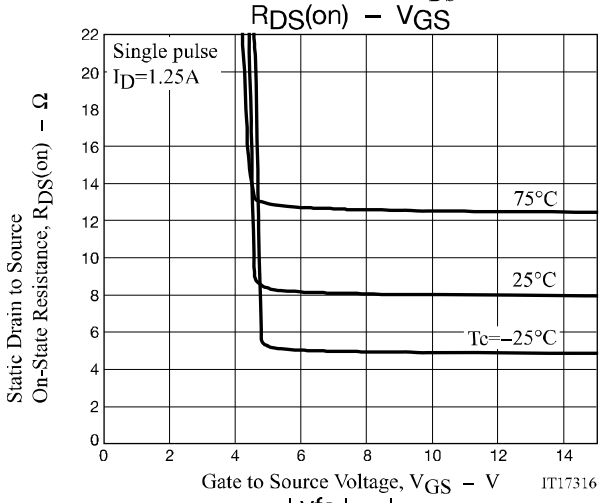
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=10mA, V_{GS}=0V	1500			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=1200V, V_{GS}=0V			1	mA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=30V, V_{DS}=0V			±100	nA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=10V, I_D=1mA	2		4	V
Forward Transfer Admittance	| yfs |	V_{DS}=20V, I_D=1.25A		1.9		S
Static Drain to Source On-State Resistance	$R_{DS}(on)$	I_D=1.25A, V_{GS}=10V		8	10.5	Ω
Input Capacitance	Ciss	V_{DS}=30V, f=1MHz		650		pF
Output Capacitance	Coss			70		pF
Reverse Transfer Capacitance	Crss			20		pF
Turn-ON Delay Time	$t_d(on)$	See Fig.2		15		ns
Rise Time	t_r			24		ns
Turn-OFF Delay Time	$t_d(off)$			140		ns
Fall Time	t_f			47		ns
Total Gate Charge	Qg	V_{DS}=200V, V_{GS}=10V, I_D=2.5A		34		nC
Gate to Source Charge	Qgs			4.7		nC
Gate to Drain “Miller” Charge	Qgd			15		nC
Diode Forward Voltage	VSD	I_S=2.5A, V_{GS}=0V		0.8	1.5	V
Reverse Recovery Time	trr	See Fig.3		350		ns
Reverse Recovery Charge	Qrr	IS=2.5A, VGS=0V, di/dt=100A/μs		2220		nC

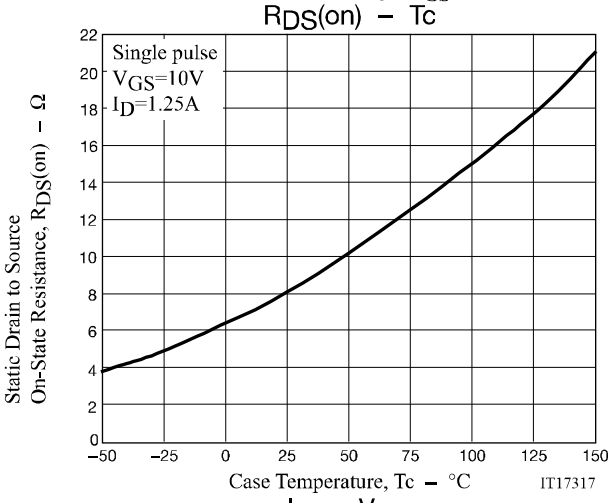
ORDERING INFORMATION

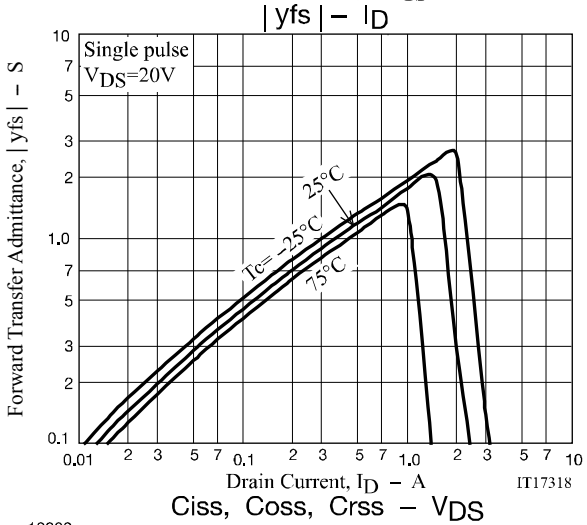
See detailed ordering and shipping information on page 4 of this data sheet.

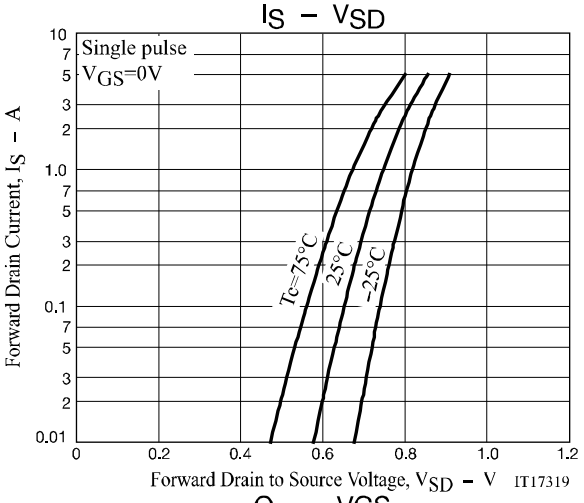

ID – VDS
Single pulse
Tc=25°C
8.0V
10.0V
6.0V
5.0V
VGS=4.0V
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT17314

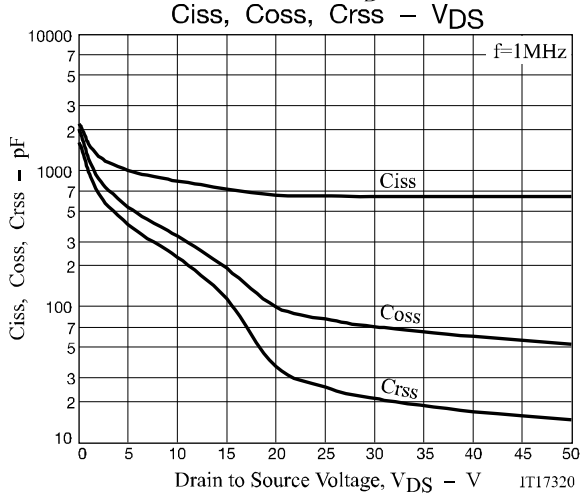

ID – VGS
Single pulse
VDS=20V
–25°C
25°C
Tc=75°C
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT17315

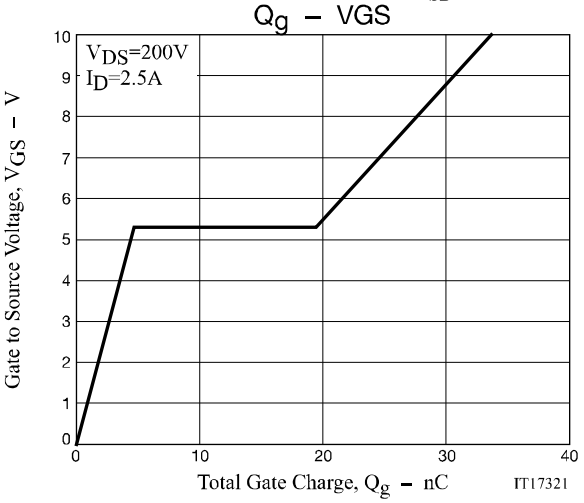

RDS(on) – VGS
Single pulse
ID=1.25A
75°C
25°C
Tc=–25°C
Static Drain to Source On-State Resistance, RDS(on) – Ω
Gate to Source Voltage, VGS – V
IT17316


RDS(on) – Tc
Single pulse
VGS=10V
ID=1.25A
Static Drain to Source On-State Resistance, RDS(on) – Ω
Case Temperature, Tc – °C
IT17317

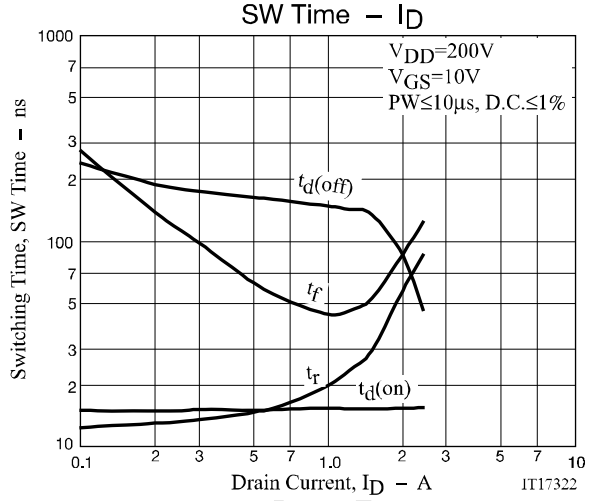

| yfs | – ID
Single pulse
VDS=20V
25°C
Tc=–25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT17318


IS – VSD
Single pulse
VGS=0V
Tc=75°C
25°C
–25°C
Forward Drain Current, IS – A
Forward Drain to Source Voltage, VSD – V
IT17319

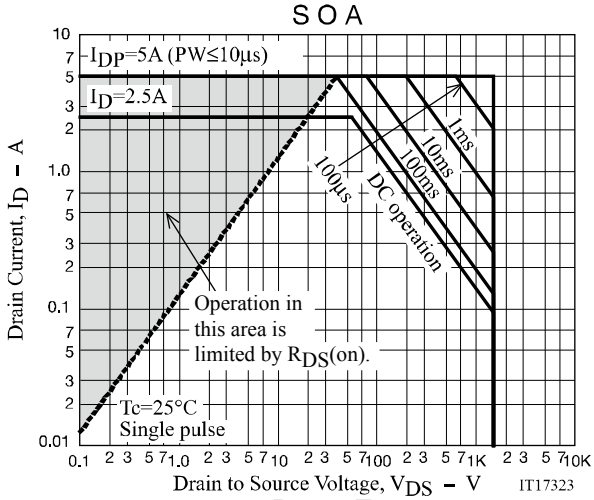

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT17320


Qg – VGS
VDS=200V
ID=2.5A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT17321

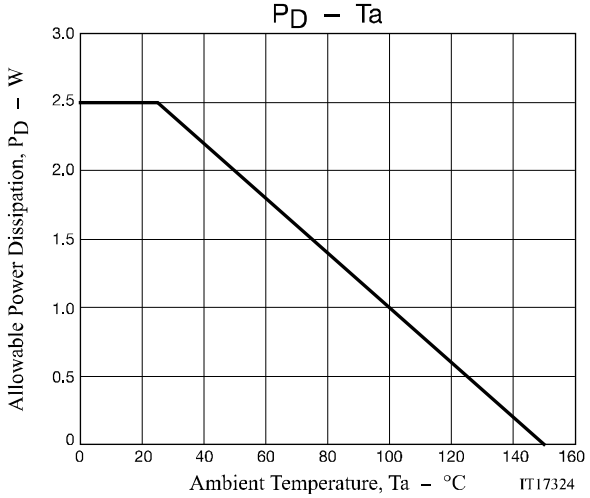
SW Time – I_D



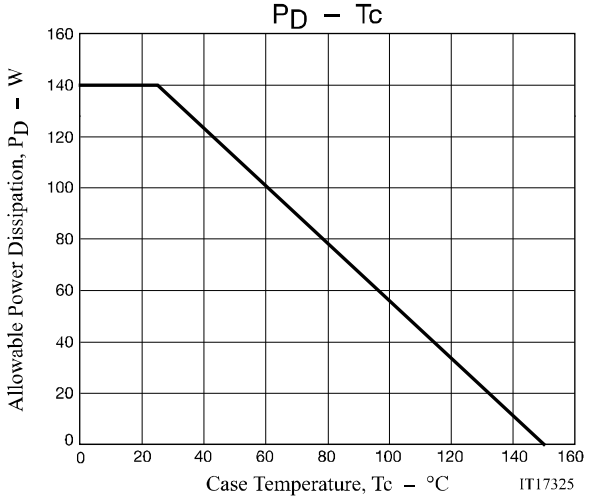
S O A



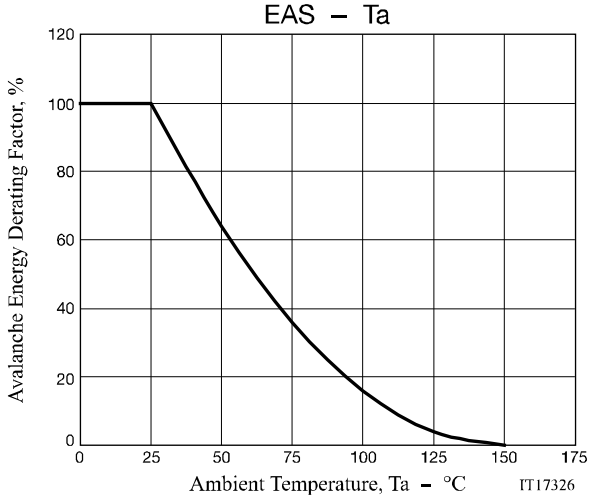
P_D – Ta



P_D – Tc



EAS – Ta



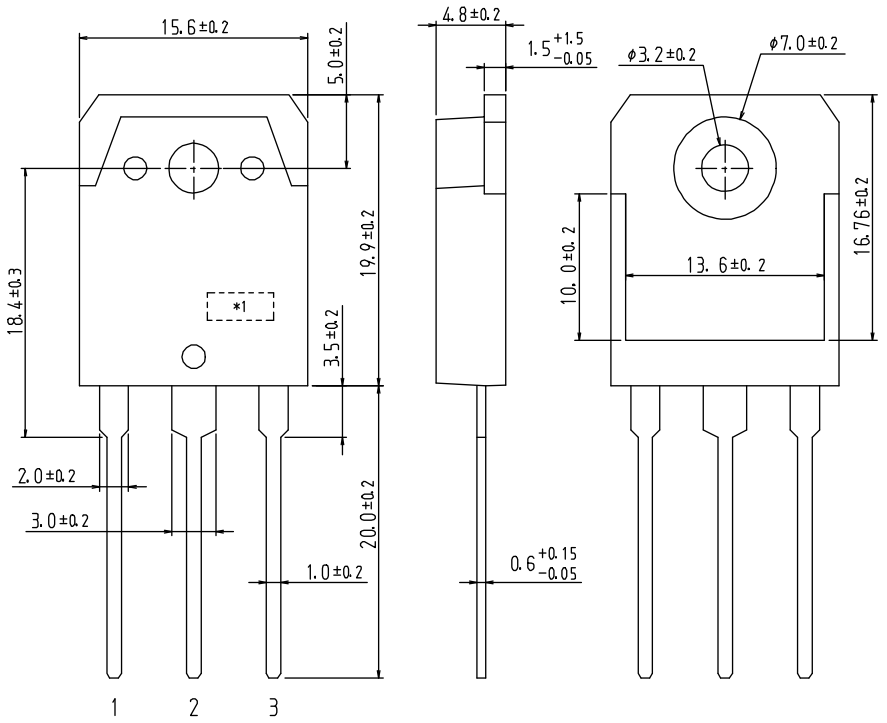
Package Dimensions

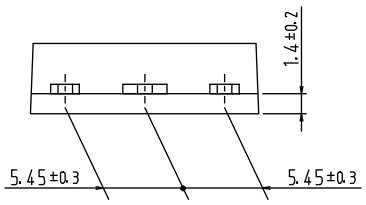
NDTL03N150CG

TO-3P-3L

CASE 340AF
ISSUE O
Unit : mm

1: Gate
2: Drain
3: Source





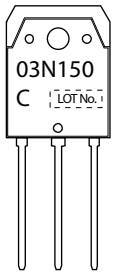
These dimension do not include mold protrusion

*1:Lot indication

Ordering & Package Information

Device	Package	Shipping	note
NDTL03N150CG	TO-3P-3L, SC-65, SOT-199, TO-247	30 pcs. / tube	Pb-Free

Marking



Electrical Connection

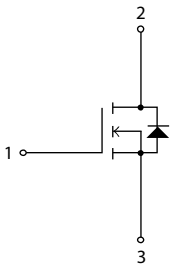


Fig.1 Unclamped Inductive Switching Test Circuit

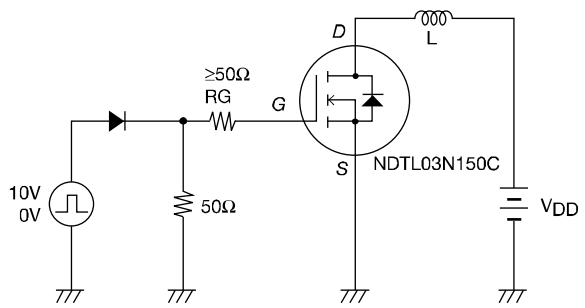


Fig.2 Switching Time Test Circuit

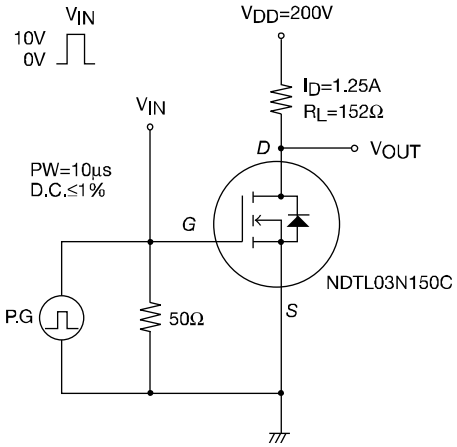
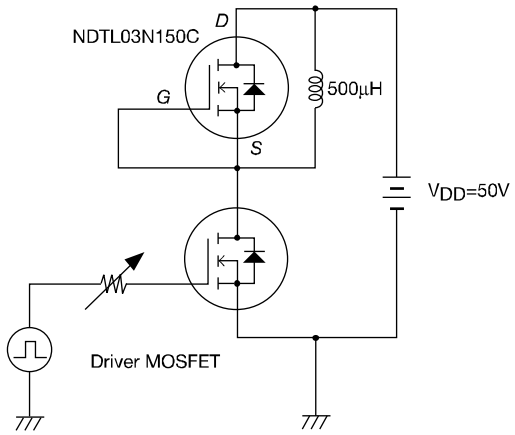


Fig.3 Reverse Recovery Time Test Circuit



Note on usage : Since the NDTL03N150C is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.