Ordering number : ENN8153

ON Semiconductor®

ON Semiconductor
DATA SHEET

N-Channel Silicon MOSFET

3LN03M — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- High-speed switching.
- 2.5V drive.
- High ESD Voltage (TYP 300V)
  [Built-in one side diode for protection between Gate-to-Source].

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage (*1)	V_{GSS}		10	V
Drain Current (DC)	I_D		0.35	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	1.4	A
Allowable Power Dissipation	P_D		0.15	A
Channel Temperature	Tch		150	A
Storage Temperature	Tstg		−55 to +150	W

(*1) : Note, when designing a circuit using this product, that it has a gate (oxide film) protection diode connected only between its gate and source.

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=8V, V_{DS}=0			1	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=100μA	0.4		1.3	V
Forward Transfer Admittance	|yfs|	V_{DS}=10V, I_D=180mA	0.36	0.6		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=180mA, V_{GS}=4V		0.7	0.9	Ω
	R_{DS}(on)2	I_D=90mA, V_{GS}=2.5V		0.8	1.15	Ω
	R_{DS}(on)3	I_D=10mA, V_{GS}=1.5V		1.6	2.4	Ω
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		30		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		7		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		3.5		pF

Marking : YG

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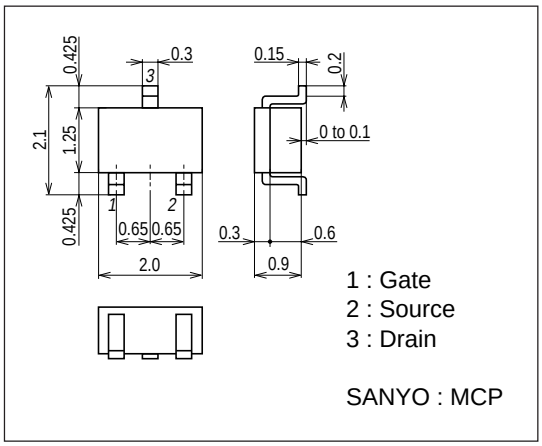
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		8		ns
Rise Time	t_r	See specified Test Circuit.		4.5		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		11		ns
Fall Time	t_f	See specified Test Circuit.		6		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=4V, I_D=350mA		1		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=4V, I_D=350mA		0.4		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=4V, I_D=350mA		0.2		nC
Diode Forward Voltage	V_{SD}	I_S=350mA, V_{GS}=0		0.88	1.2	V

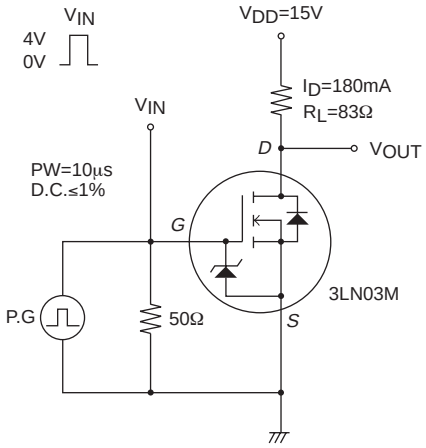
Package Dimensions

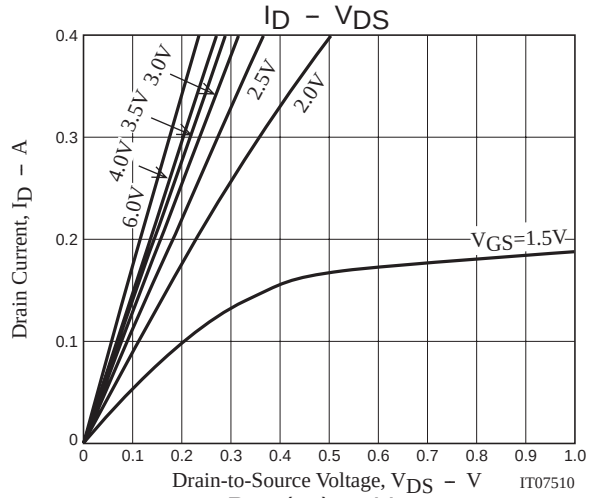
unit : mm

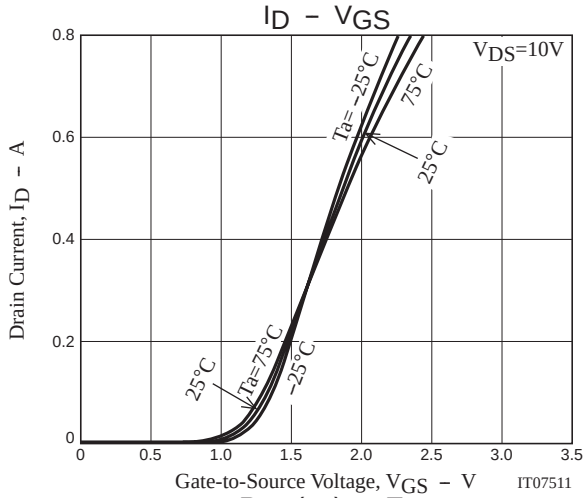
2158A

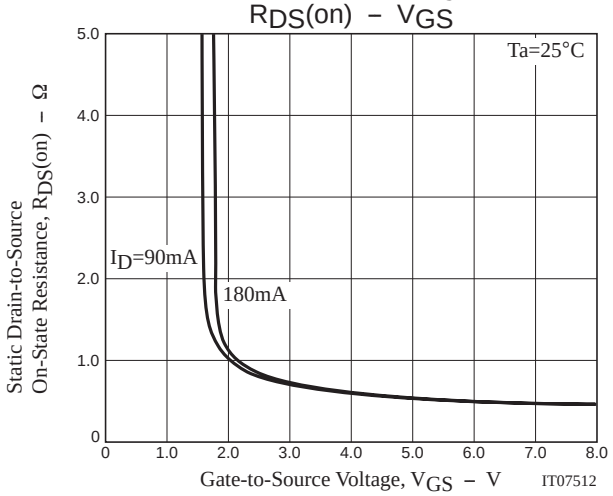


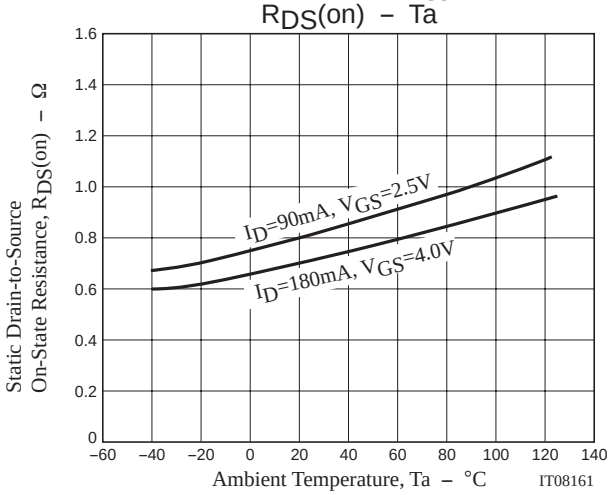
Switching Time Test Circuit

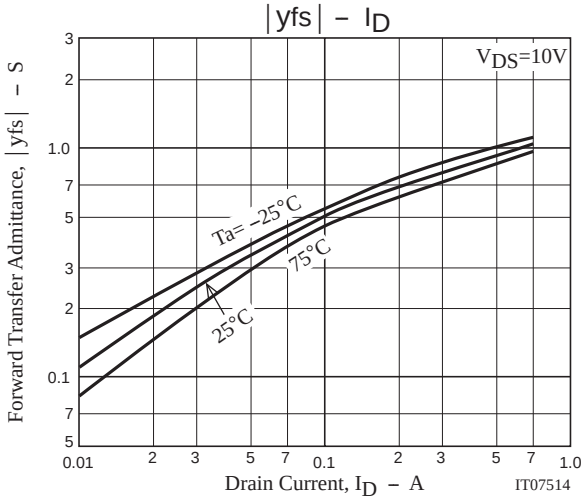


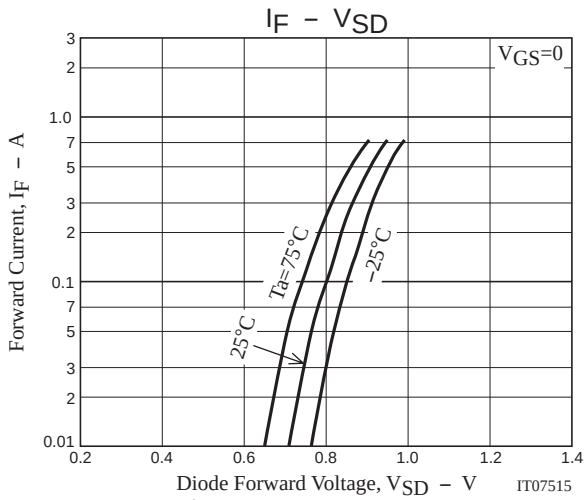


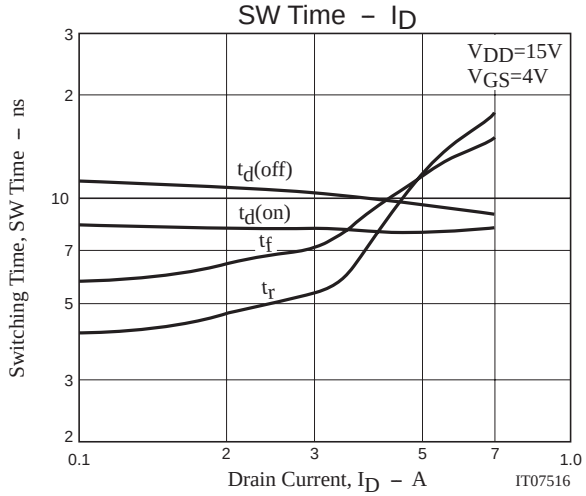


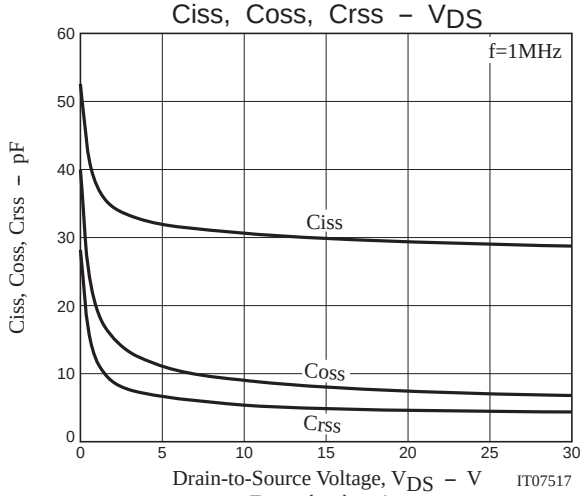


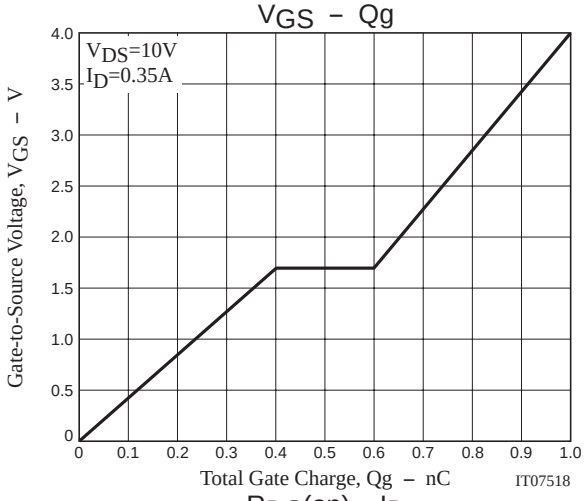


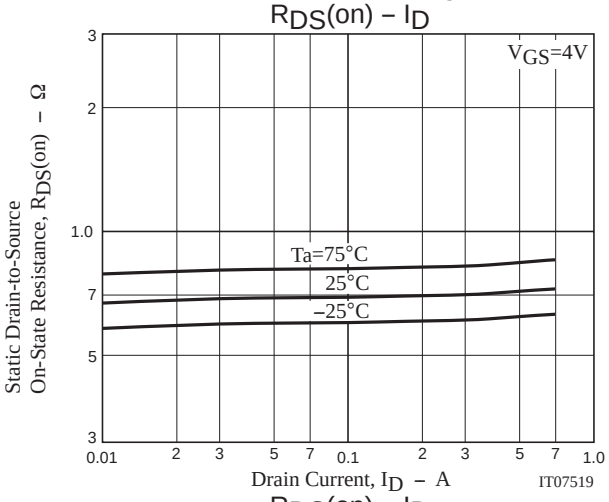

|yfs| – ID
VDS=10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT07514

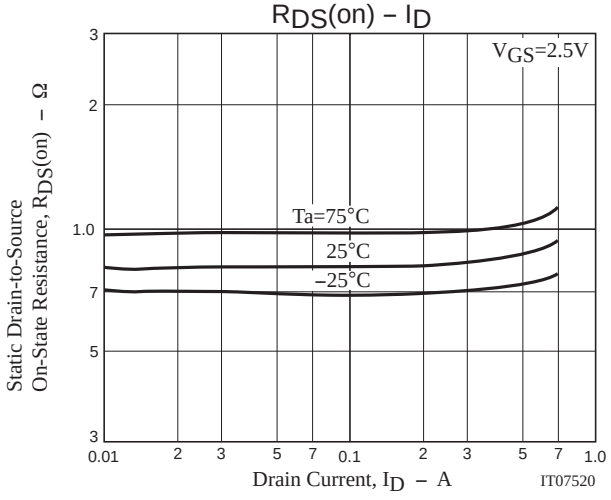

IF – VSD
VGS=0
Ta=75°C
–25°C
25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT07515

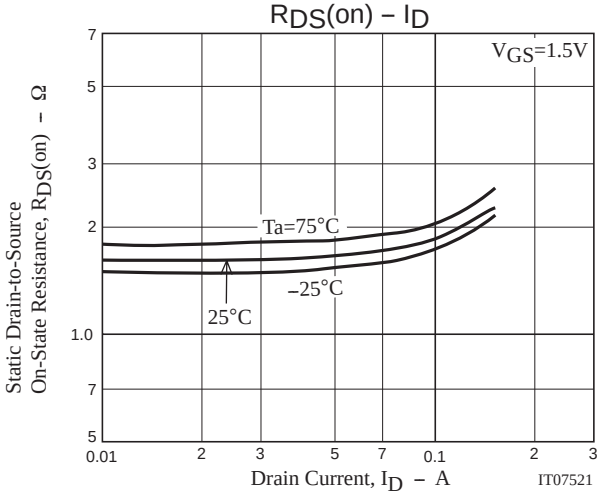

SW Time – ID
VDD=15V
VGS=4V
td(off)
td(on)
tf
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT07516

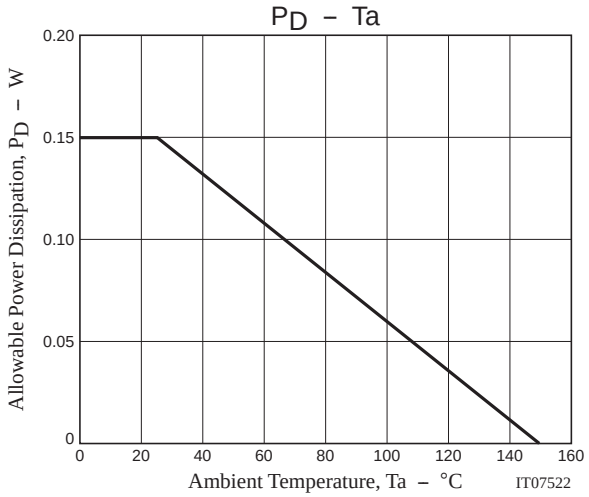

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT07517


VGS – Qg
VDS=10V
ID=0.35A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT07518


RDS(on) – ID
VGS=4V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT07519


RDS(on) – ID
VGS=2.5V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT07520


RDS(on) – ID
VGS=1.5V
Ta=75°C
–25°C
25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT07521



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