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25N10

100V N-Channel Enhancement Mode MOSFET

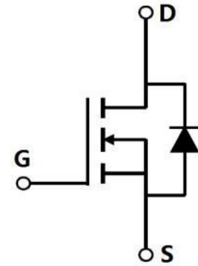
General Description

25N10 use advanced VD MOST technology to provide low RDS(ON), low gate charge, fast switching This device is specially designed to get better ruggedness and suitable to use in

Low RDS(on) & FOM

Extremely low switching loss

Excellent stability and uniformity or Invertors

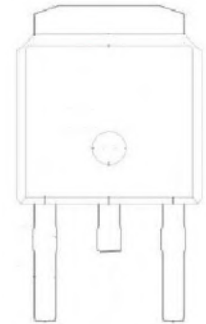


Applications

Consumer electronic power supply Motor control

Synchronous-rectification Isolated DC

Synchronous-rectification applications



General Features

V_{DS} = 100V I_D =25 A

$R_{DS(ON)}$ < 55mΩ @ V_{GS}=10V

$R_{DS(ON)}$ < 85mΩ @ V_{GS}=4.5V

Absolute Maximum Ratings@T_j=25ºC(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V	25	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V	15	A
I_{DM}	Pulsed Drain Current[1]	60	A
P_D@T_C=25℃	Total Power Dissipation	44.6	W
P_D@T_A=25℃	Total Power Dissipation	2	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Rthj-c	Maximum Thermal Resistance, Junction-case	2.8	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient (PCB mount)[3]	62.5	℃/W

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	100	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=12A	-	-	55	mΩ
		V_{GS}=5V, I_D=8A	-	-	85	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.9	-	2.5	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=12A	-	14	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V, V_{GS}=0V	-	-	25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=12A	-	13.5	21.6	nC
Q_{gs}	Gate-Source Charge	V_{DS}=80V	-	3	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	9	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=50V	-	6.5	-	ns
t_r	Rise Time	I_D=12A	-	18	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=1Ω	-	20	-	ns
t_f	Fall Time	V_{GS}=10V	-	5	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V V_{DS}=25V f=1.0MHz	-	840	1340	pF
C_{oss}	Output Capacitance		-	115	-	pF
C_{rss}	Reverse Transfer Capacitance		-	80	-	pF
R_g	Gate Resistance	f=1.0MHz	-	1.6	-	Ω
V_{SD}	Forward On Voltage[2]	I_S=12A, V_{GS}=0V	-	-	1.3	V
t_{rr}	Reverse Recovery Time[2]	I_S=12A, V_{GS}=0V dI/dt=100A/μs	-	40	-	ns
Q_{rr}	Reverse Recovery Charge		-	70	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Surface mounted on 1 in^2 copper pad of FR4 board

Typical Performance Characteristics

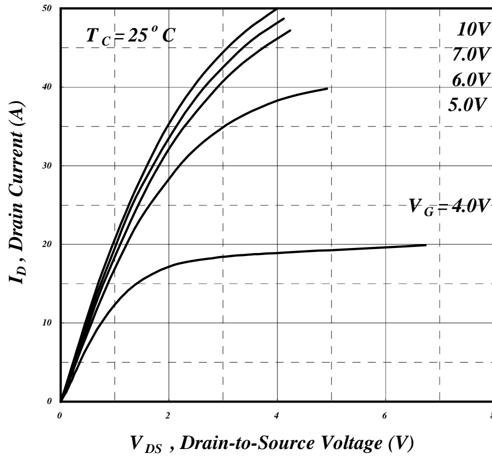


Fig 1. Typical Output Characteristics

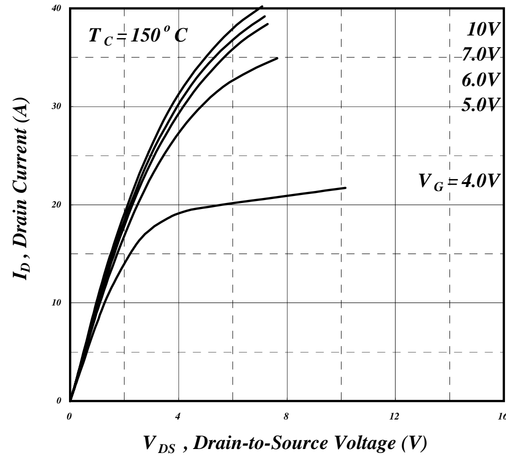


Fig 2. Typical Output Characteristics

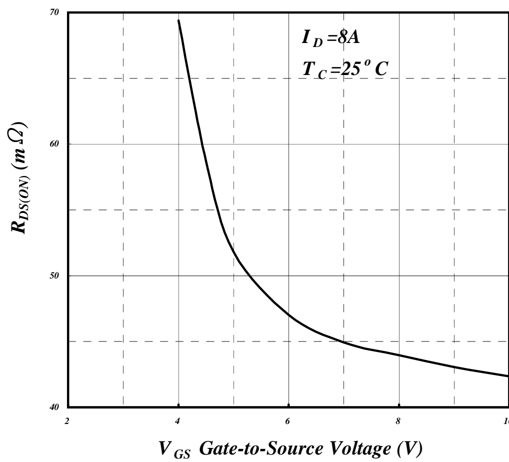


Fig 3. On-Resistance v.s. Gate Voltage

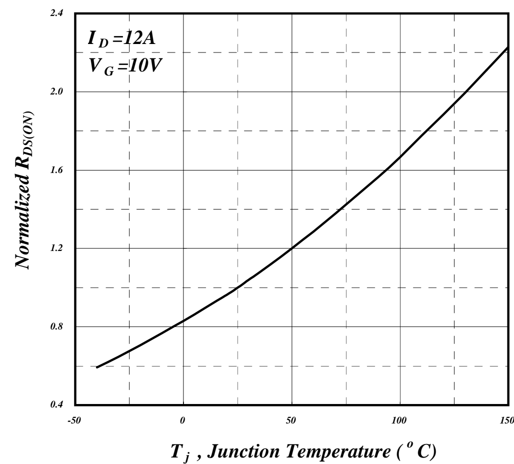


Fig 4. Normalized On-Resistance v.s. Junction Temperature

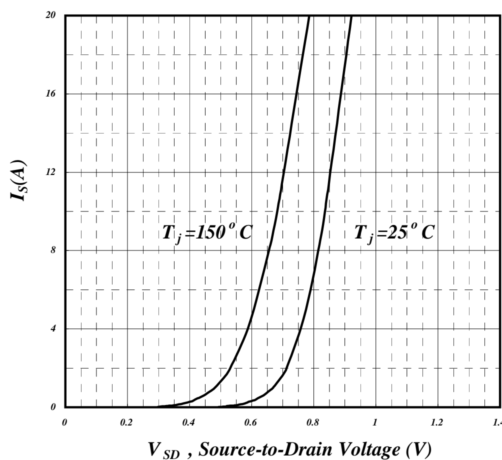


Fig 5. Forward Characteristic of Reverse Diode

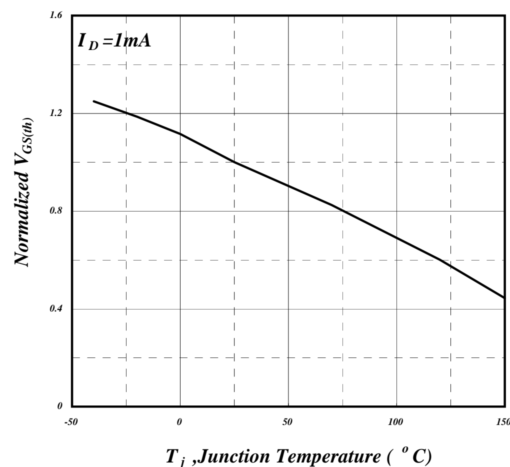


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

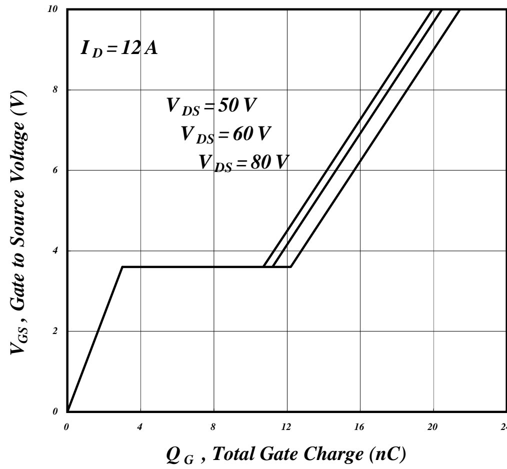


Fig 7. Gate Charge Characteristics

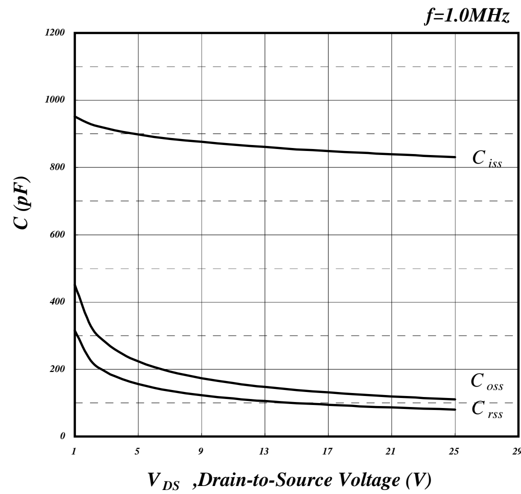


Fig 8. Typical Capacitance Characteristics

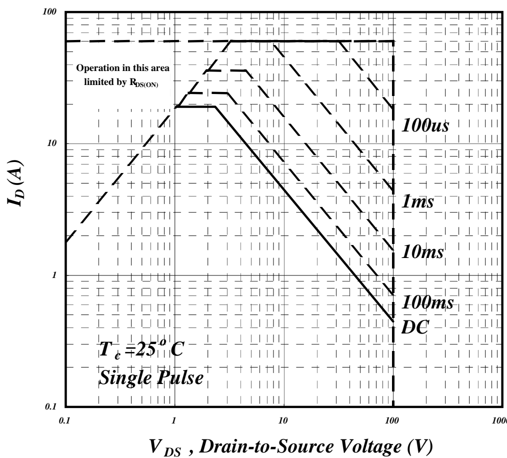


Fig 9. Maximum Safe Operating Area

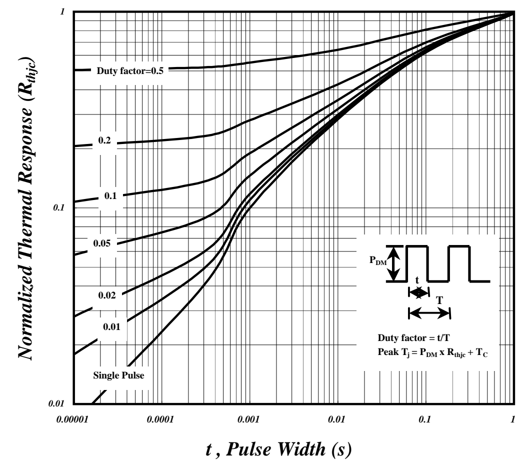


Fig 10. Effective Transient Thermal Impedance

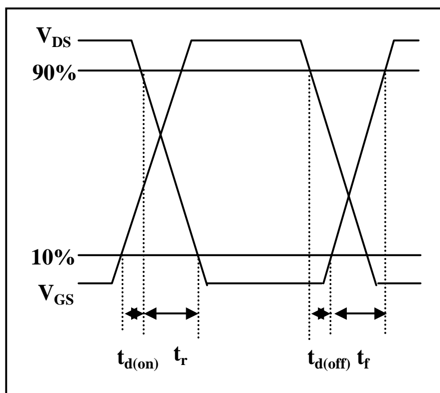


Fig 11. Switching Time Waveform

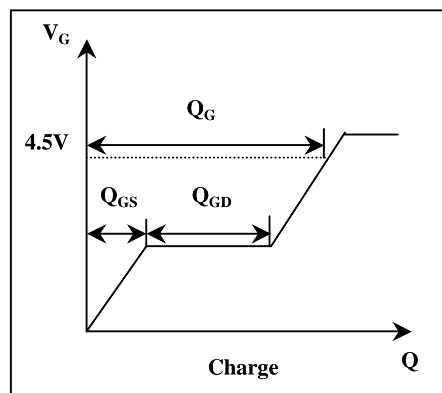


Fig 12. Gate Charge Waveform