

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	10N65F
▶ Overseas	Part Number	10N65F
▶ Equivalent	Part Number	10N65F

EV is the abbreviation of name EVVO

650V N-Channel Enhancement Mode MOSFET

Description

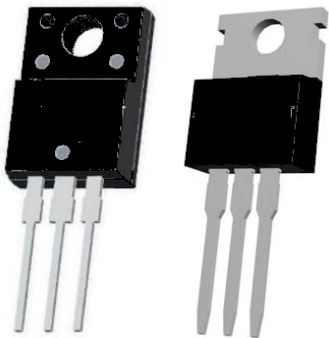
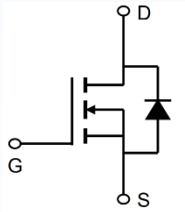
The 10N65F/P is silicon N-channel Enhanced VDMOSFETs, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.

General Features

$V_{DS} = 650V$ $I_D = 10A$
 $R_{DS(ON)} < 0.9\Omega$ @ $V_{GS}=10V$ (Type: 0.75Ω)

Application

Uninterruptible Power Supply(UPS)
Power Factor Correction (PFC)



Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
		TO-220F TO-220	
VDSS	Drain-Source Voltage (V _{GS} = 0V)	650	V
ID	Continuous Drain Current	10	A
IDM	Pulsed Drain Current (note1)	58	A
VGS	Gate-Source Voltage	±30	V
EAS	Single Pulse Avalanche Energy (note2)	426	mJ
IAR	Avalanche Current (note1)	9	A
EAR	Repetitive Avalanche Energy note1)	41	mJ
PD	Power Dissipation (T _C = 25°C)	32.1	W
TJ, Tstg	Operating Junction and Storage Temperature Range	-55~+150	°C
RthJC	Thermal Resistance, Junction-to-Case	4.46	°C/W
RthJA	Thermal Resistance, Junction-to-Ambient	46.7	°C/W

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Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	650	685	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} = 650V, V _{GS} = 0V, T _J = 25°C	--	--	1	μA
IGSS	Gate-Source Leakage	V _{GS} = ±30V	--	--	±100	nA
VGS(th)	Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.0	--	4.0	V
RDS(on)	Drain-Source On-Resistance (Note3)	V _{GS} = 10V, I _D = 3.5A	--	0.75	0.9	Ω
Ciss	Input Capacitance	V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz	--	1037	--	pF
Coss	Output Capacitance		--	138	--	
Crss	Reverse Transfer Capacitance		--	5.3	--	
Qg	Total Gate Charge	V _{DD} = 520V, I _D = 9A, V _{GS} = 10V	--	19	--	nC
Qgs	Gate-Source Charge		--	7.3	--	
Qgd	Gate-Drain Charge		--	8.5	--	
td(on)	Turn-on Delay Time	V _{DD} = 325V, I _D = 7A, R _G = 25Ω	--	18	--	ns
t _r	Turn-on Rise Time		--	30	--	
td(off)	Turn-off Delay Time		--	61	--	
t _f	Turn-off Fall Time		--	36	--	
IS	Continuous Body Diode Current	T _C = 25 °C	--	--	9.0	A
ISM	Pulsed Diode Forward Current		--	--	36	A
VSD	Body Diode Voltage	T _J = 25°C, I _{SD} = 7A, V _{GS} = 0V	--	--	1.2	V
trr	Reverse Recovery Time	V _{GS} = 0V, I _S = 7A, di _F /dt = 100A/μs	--	431	--	ns
Qrr	Reverse Recovery Charge		--	2.6	--	μC

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The EAS data shows Max. rating . I_{AS} = 9.0A, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25 °C
- 3、The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

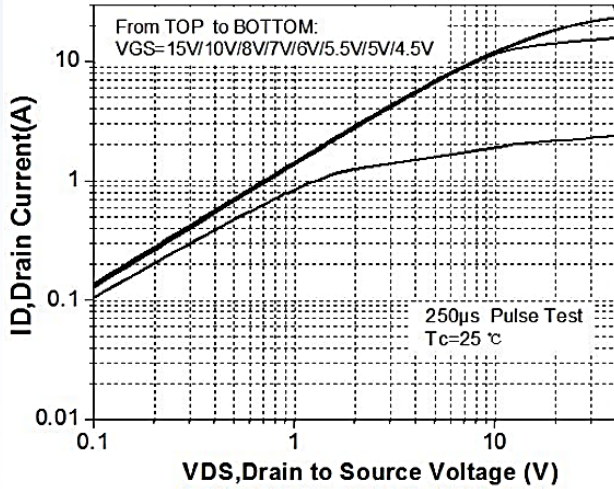


Figure 1. On-Region Characteristics

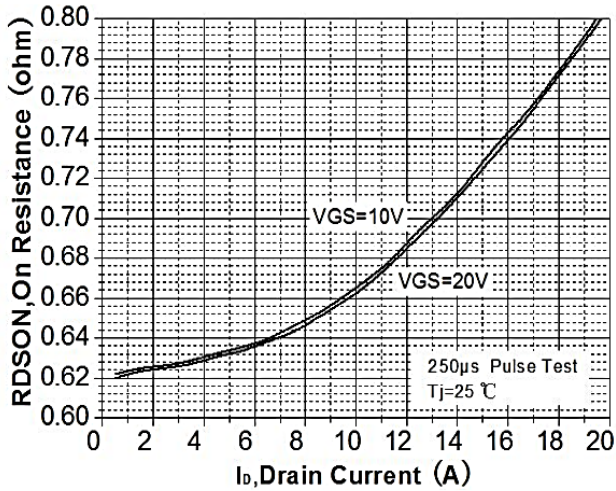


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

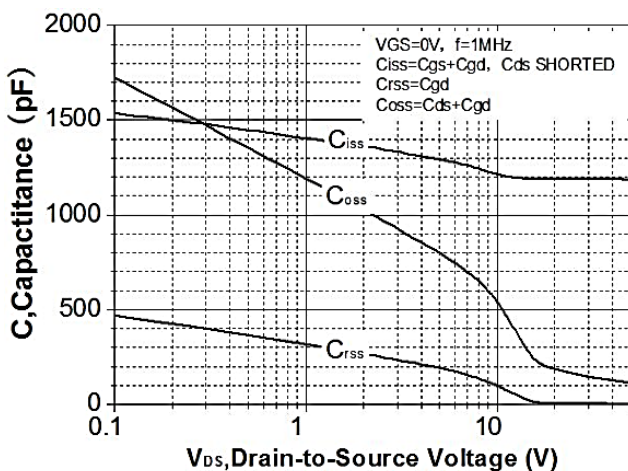


Figure 5. Capacitance Characteristics

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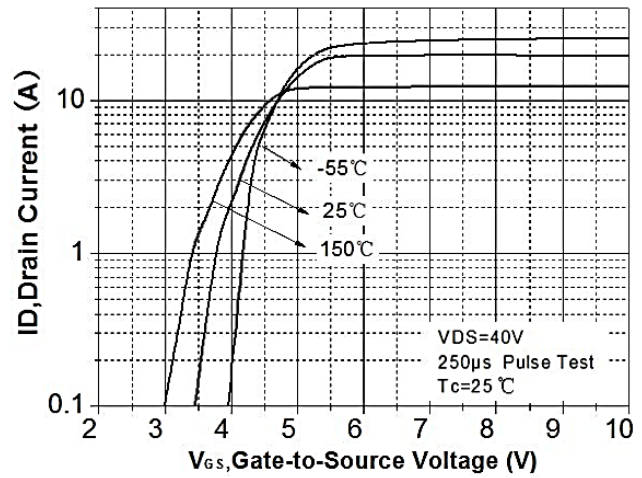


Figure 2. Transfer Characteristics

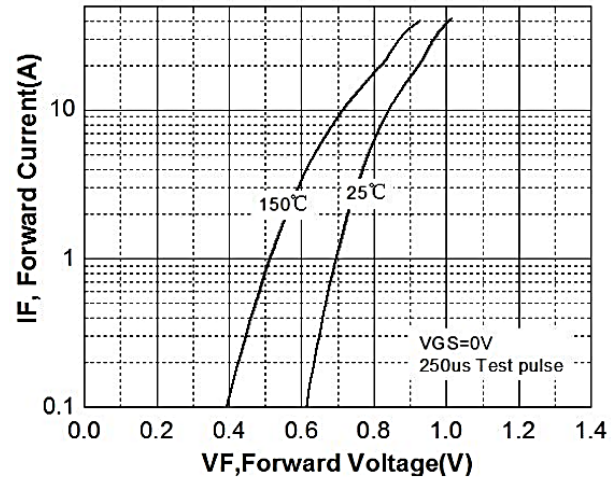


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

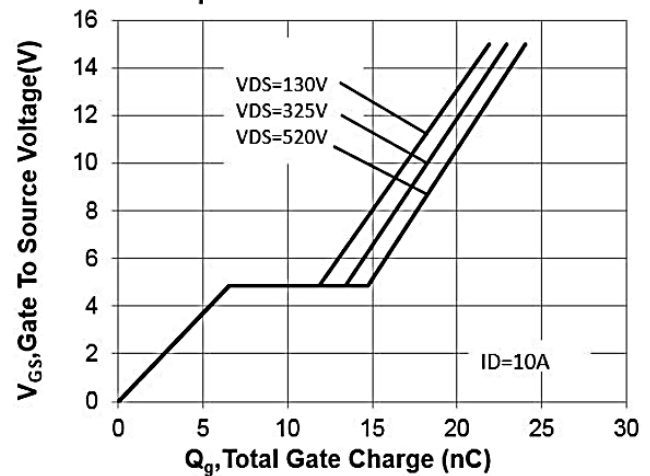


Figure 6. Gate Charge Characteristics

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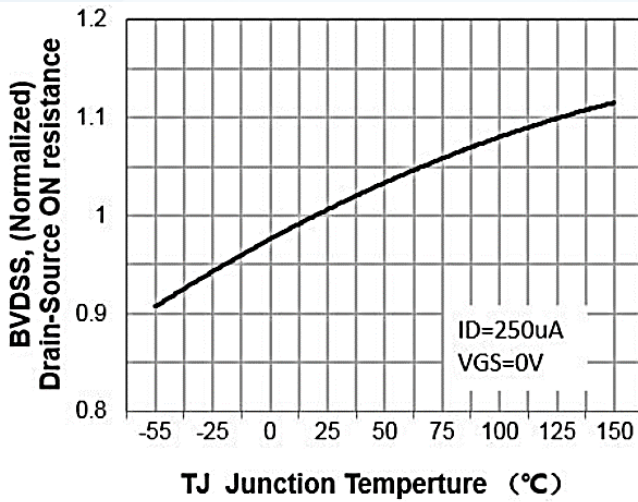


Figure 7. Breakdown Voltage Variation vs Temperature

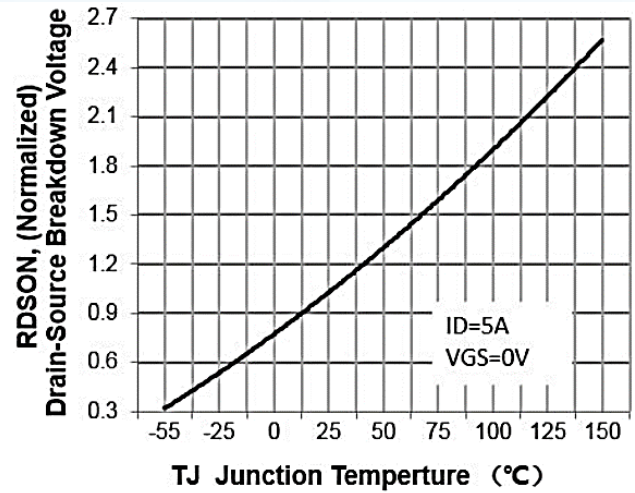


Figure 8. On-Resistance Variation vs Temperature

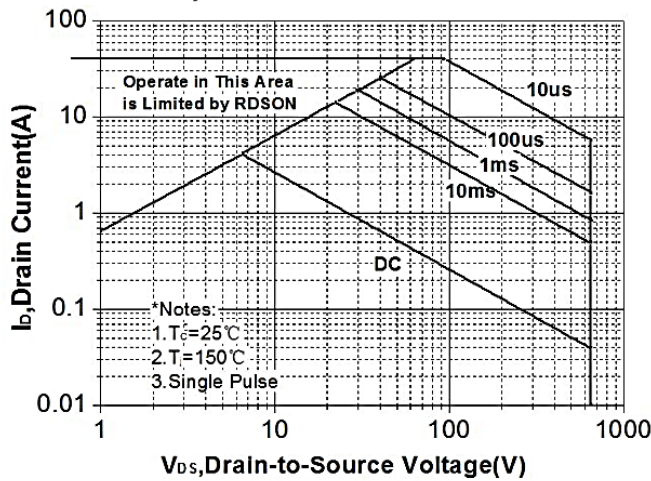


Figure 9. Maximum Safe Operating Area

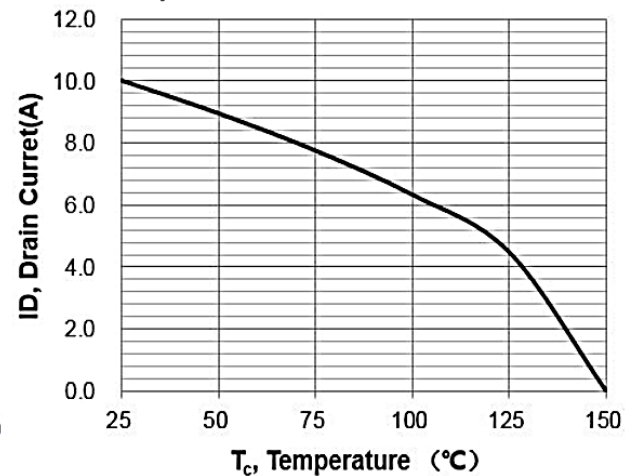


Figure 10. Maximum Drain Current vs Case Temperature

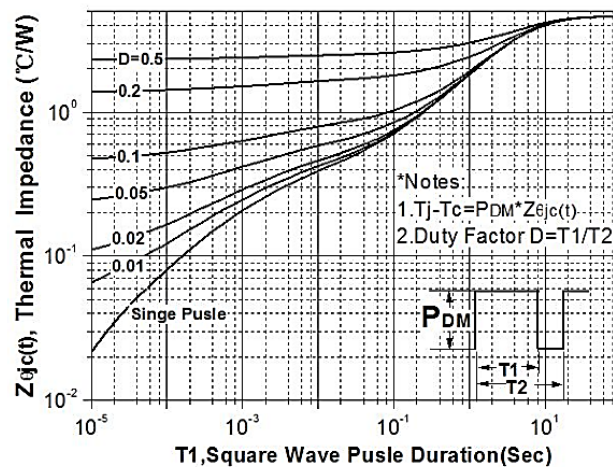
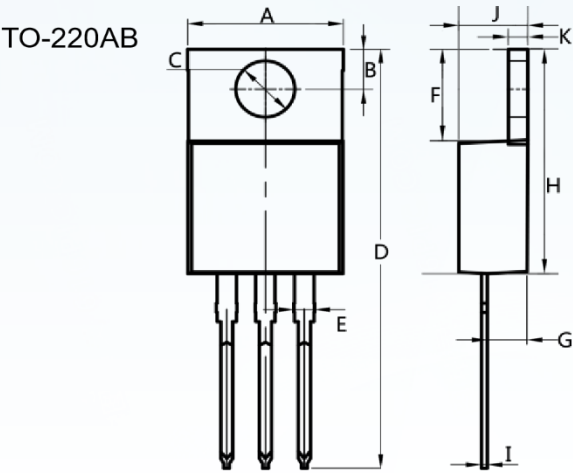


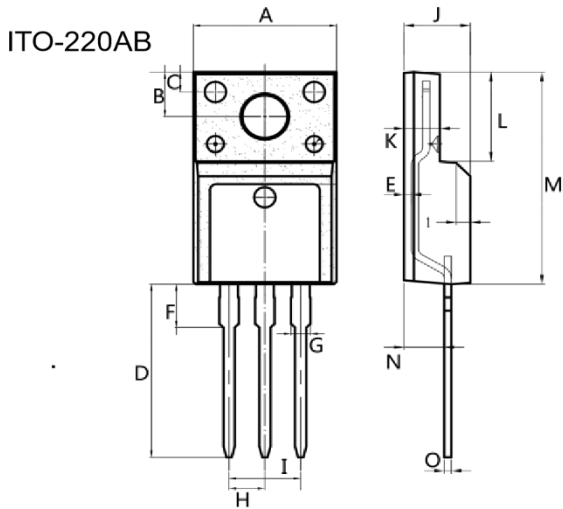
Figure 11. Transient Thermal Response Curve

650V N-Channel Enhancement Mode MOSFET



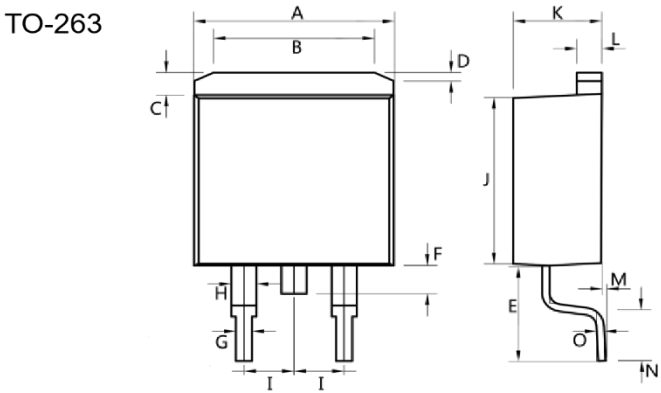
Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4

All Dimensions in millimeter



Dim.	Min.	Max.
A	9.9	10.3
B	2.9	3.5
C	1.15	1.45
D	12.75	13.25
E	0.55	0.75
F	3.1	3.5
G	1.25	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.55	4.75
K	2.4	2.7
L	6.35	6.75
M	15.0	16.0
N	2.75	3.15
O	0.45	0.60

All Dimensions in millimeter



Dim.	Min.	Max.
A	10.0	10.5
B	7.25	7.75
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.75	0.95
H	1.15	1.35
I	Typ 2.54	
J	8.4	8.6
K	4.4	4.6
L	1.25	1.45
M	0.02	0.1
N	2.4	2.8
O	0.35	0.45

All Dimensions in millimeter

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