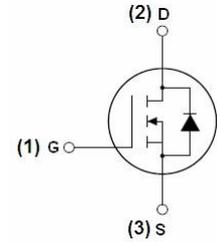


650V N-Plane Enhancement Mode MOSFET

Description

The 13N65 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge . The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other application



General Features

$V_{DS} = 650V, I_D = 13A$

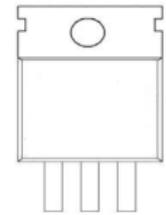
$R_{DS(ON)} < 0.5\Omega @ V_{GS} = 10V$

Application

Power switching application

Hard Switched and High Frequency Circuits

Uninterruptible Power Supply



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

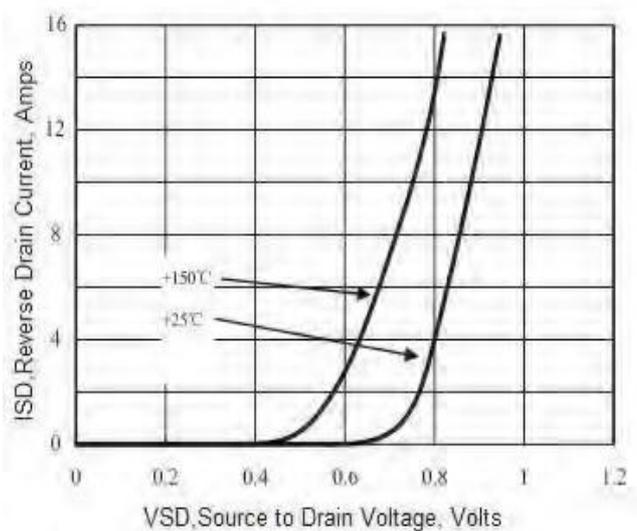
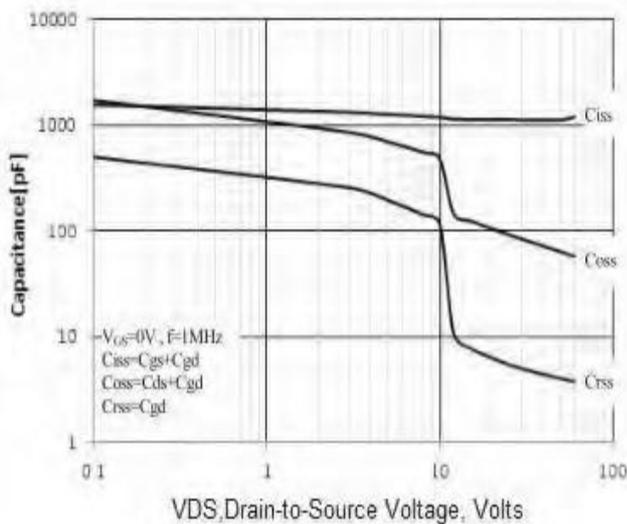
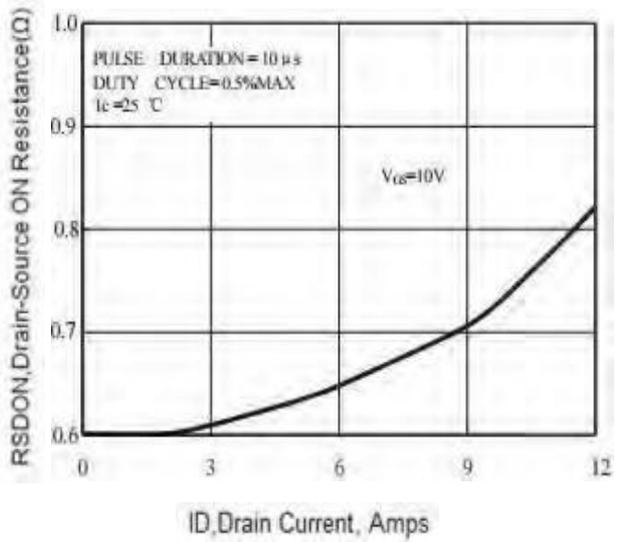
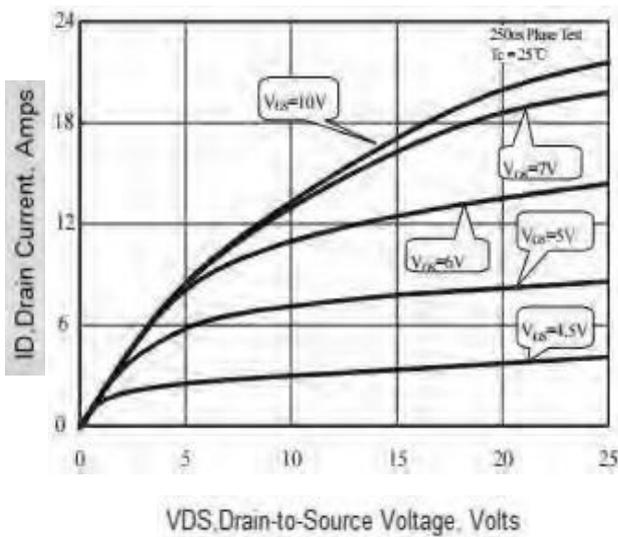
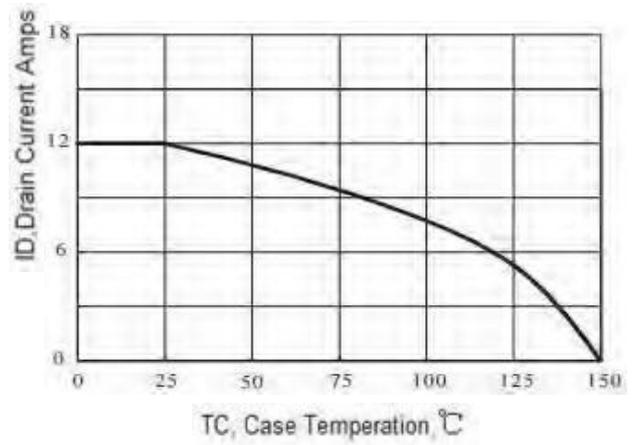
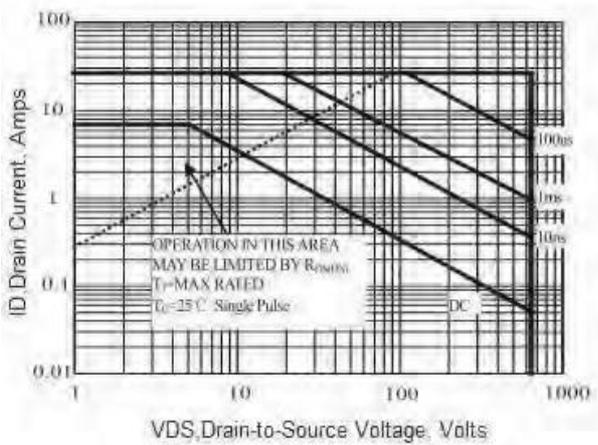
Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continue Drain Current	I_D	13	A
Pulsed Drain Current (Note1)	I_{DM}	48	A
Power Dissipation	P_D	120	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	550	mJ
Operating Temperature Range	T_J	150	$^\circ C$
Storage Temperature Range	TSTG	-55 to +150	$^\circ C$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.04	$^\circ C/W$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	100	$^\circ C/W$

650V N-Plane Enhancement Mode MOSFET

Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	$V_{DS} = 650\text{ V}, V_{GS} = 0\text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 30\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10\text{ V}, I_D = 6\text{ A}$	$R_{DS(on)}$	-	-	0.5	Ω
Forward Transconductance	$V_{DS} = 15\text{ V}, I_D = 6\text{ A}$	g_{fs}	-	12	-	S
Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$	C_{iss}	-	2000	-	pF
Output Capacitance		C_{oss}	-	160	-	pF
Reverse Transfer Capacitance		C_{rss}	-	10	-	pF
Turn-on Delay Time(Note2)	$I_D = 12\text{ A}, V_{DD} = 325\text{ V}, R_G = 10\ \Omega$	$t_d(ON)$	-	28	-	ns
Rise Time(Note2)		t_r	-	26	-	ns
Turn-Off Delay Time(Note2)		$t_d(OFF)$	-	64	-	ns
Fall Time(Note2)		t_f	-	45	-	ns
Total Gate Charge(Note2)	$I_D = 12\text{ A}, V_{DD} = 520\text{ V}, V_{GS} = 10\text{ V}$	Q_G	-	40	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	10	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	14	-	nC
Maximun Body-Diode Continuous Current	$I_{SD} = 12\text{ A}$	I_S	-	-	12	A
Maximun Body-Diode Pulsed		I_{SM}	-	-	48	A
Current(Note2)		V_{SD}	-	-	1.4	V
Drain-Source Diode Forward Voltage	$I_{SD} = 12\text{ A}, V_{GS} = 0\text{ V}, dI_F / dt = 100\text{ A}/\mu\text{s}$	t_{rr}	-	650	-	ns
Reverse Recovery Time(Note2)		Q_{rr}	-	4.3	-	μC
Reverse Recovery Charge(Note2)						

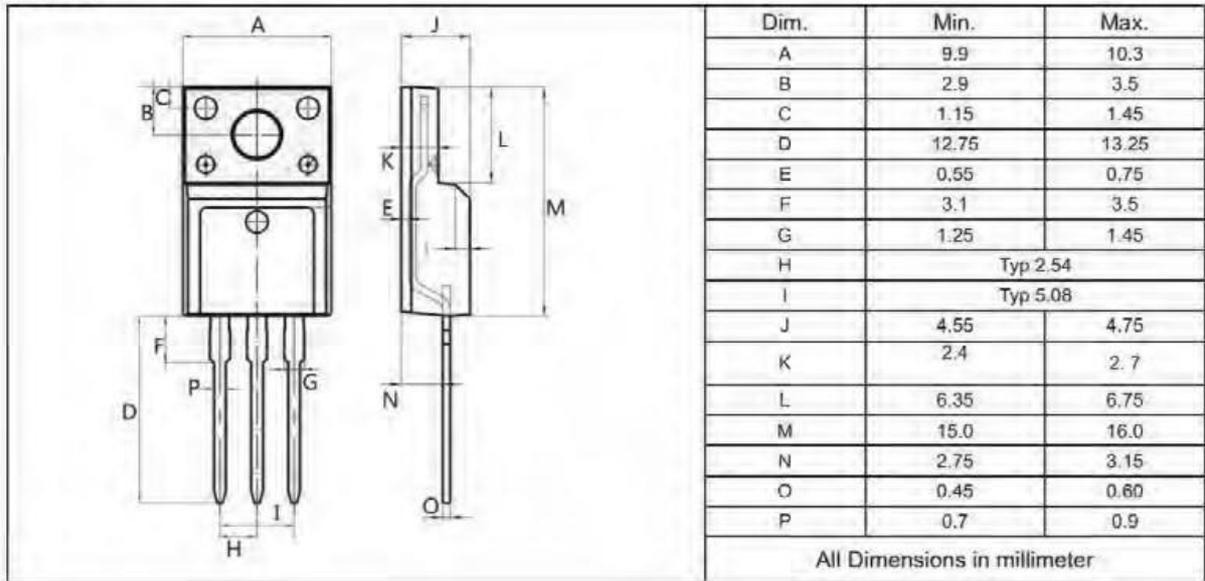
Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. . Essentially independent of operating temperature. The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

650V N-Plane Enhancement Mode MOSFET
RATINGS AND CHARACTERISTIC CURVES


650V N-Plane Enhancement Mode MOSFET

TO-220F



650V N-Plane Enhancement Mode MOSFET

TO-220AB

