New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (201) 376-2922
(212) 227-6005
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N-Channel Enhancement Mode
MOSPOWER

APPLICATIONS
- Switching Regulators
- Converters
- Motor Drivers

PRODUCT SUMMARY

Part Number	BV_{DSS} Volts	$r_{DS(ON)}$ (ohms)
2N6661	90	4

PIN 1 – Source
PIN 2 – Gate
PIN 3 & CASE – Drain

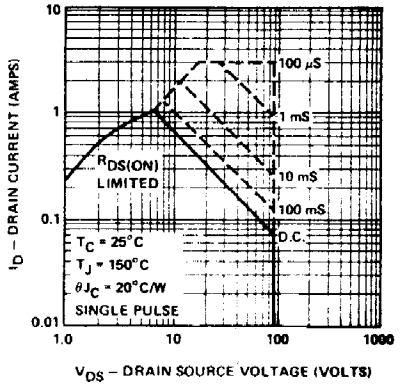
(TO–39)

ABSOLUTE MAXIMUM RATINGS (T_C = 25° C unless otherwise noted)

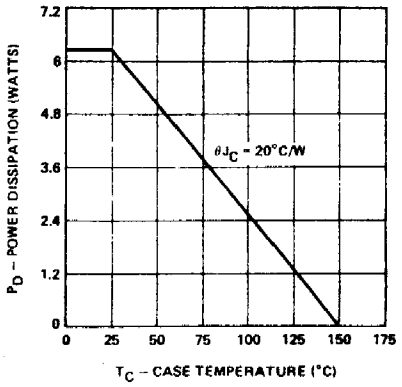
	Parameter	2N6661	Units
V_{DS}	Drain-Source Voltage	90	V
V_{DGR}	Drain-Gate Voltage (R_{GS} = 1 MΩ)	90	V
I_D @ T_C = 25° C	Continuous Drain Current	±0.9	A
I_D @ T_C = 100° C	Continuous Drain Current	±0.7	A
I_{DM}	Pulsed Drain Current[1]	±3	A
V_{GS}	Gate-Source Voltage	±40	V
P_D @ T_C = 25° C	Max. Power Dissipation	6.25	W
P_D @ T_C = 100° C	Max. Power Dissipation	2.5	W
Junction to Case	Linear Derating Factor	0.05	W/° C
Junction to Ambient	Linear Derating Factor	0.006	W/° C
T_J Tstg	Operating and Storage Temperature Range	–55 To +150	° C
Lead Temperature	(1/16" from case for 10 secs.)	300	° C

1 **Pulse Test:** Pulsewidth ≤ 300μsec, Duty Cycle ≤ 2%

Active Region



Power Derating



Quality Semi-Conductors

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ELECTRICAL CHARACTERISTICS (T_C = 25° C unless otherwise noted)

STATIC

Parameter		Type	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	2N6661	90	110		V	V_{GS} = 0, I_D = 10 μA
$V_{GS(th)}$	Gate-Threshold Voltage	2N6661	0.8	1.5	2	V	V_{DS} = V_{GS}, I_D = 1 mA
I_{GSSF}	Gate-Body Leakage Forward	2N6661		1 5	100 500	nA	V_{GS} = +15V, V_{DS} = 0 V_{GS} = +15V, V_{DS} = 0, T_A = 125° C
I_{GSSR}	Gate-Body Leakage Reverse	2N6661		−1	−100	nA	V_{GS} = −15V, V_{DS} = 0
I_{DSS}	Zero Gate Voltage Drain Current	2N6661		1	10	μA	V_{DS} = Max. Rating, V_{GS} = 0
		2N6661		50	500	μA	V_{DS} = 0.8 Max. Rating, V_{GS} = 0, T_C = 125° C
$I_{D(on)}$	On-State Drain Current[1]	2N6661	1.5	1.7		A	$V_{DS} \geq 2V_{DS(ON)}$, V_{GS} = 10V
$V_{DS(on)}$	Static Drain-Source On-State Voltage[1]	2N6661		1.2	1.6	V	V_{GS} = 5V, I_D = 0.3A
		2N6661		3	4	V	V_{GS} = 10V, I_D = 1A
$R_{DS(on)}$	Static Drain-Source On-State Resistance[1]	2N6661		4	5.3	Ω	V_{GS} = 5V, I_D = 0.3A
		2N6661		3	4	Ω	V_{GS} = 10V, I_D = 1A
$R_{DS(on)}$	Static Drain-Source On-State Resistance[1]	2N6661		4.1	5.5	Ω	V_{GS} = 10V, I_D = 1A, T_C = 125°C

DYNAMIC

g_{fs}	Forward Transductance[1]	2N6661	170	195		mS (m℧)	$V_{DS} \geq 2V_{DS(ON)}$, I_D = 0.5A
C_{iss}	Input Capacitance	2N6661		35	50	pF	V_{GS} = 0, V_{DS} = 25V f = 1 MHz
C_{oss}	Output Capacitance	2N6661		33	40	pF	
C_{rss}	Reverse Transfer Capacitance	2N6661		2	10	pF	
$t_{d(on)}$	Turn-On Delay Time	2N6661		8	10	ns	V_{DD} = 25V, $I_D \cong$ 1A R_g = 25Ω, R_L = 23Ω (MOSFET switching times are essentially independent of operating temperature.)
$t_{d(off)}$	Turn-Off Delay Time	2N6661		8	10	ns	

THERMAL RESISTANCE

R_{thJC}	Junction-to-Case	2N6661			20	°C/W	
R_{thJA}	Junction-to-Ambient	2N6661			170	°C/W	Free Air Operation

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S	Continuous Source Current (Body Diode)	2N6661			−0.9	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier 
I_{SM}	Source Current[1] (Body Diode)	2N6661			−3	A	
V_{SD}	Diode Forward Voltage[1]	2N6661		−1.2		V	T_C = 25°C, I_S = −0.9A, V_{GS} = 0

1 Pulse Test: Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%

Data Sheet Curves: VNMA09

NJS

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