n-channel Power-Transistor

Product Summary

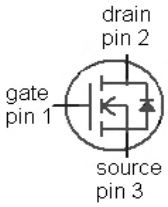
V_{DS}	80	V
$R_{DS(on),max}$	7	mΩ
I_D	80	A

RoHS

Features

- for dc-motor drive systems
- N-channel, normal level
- 175 °C operating temperature
- Pb-free lead plating; RoHS compliant

Type	IPP881N08N G
	
Package	PG-TO220-3
Marking	881N08N



Maximum ratings, at T_j=25 °C, unless otherwise specified

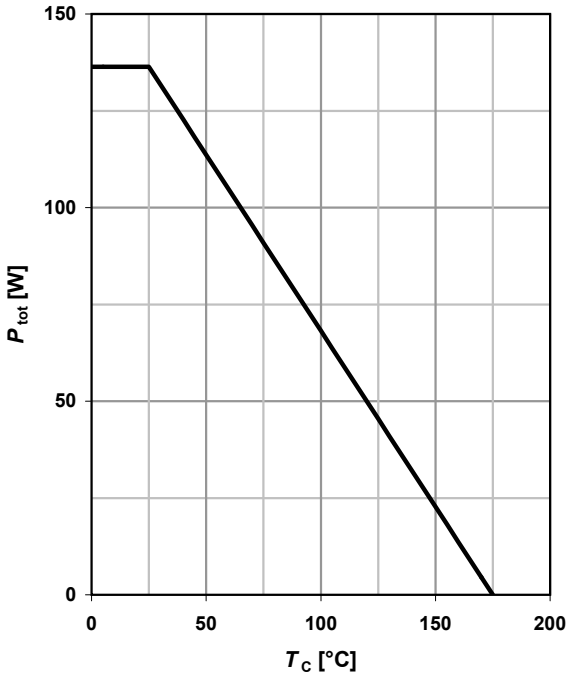
Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	T_C=25 °C[2)]	80	A
		T_C=100 °C	72	
Pulsed drain current[2)]	$I_{D,pulse}$	T_C=25 °C	320	
Avalanche energy, single pulse[3)]	E_{AS}	I_D=73 A, R_{GS}=25 Ω	150	mJ
Gate source voltage	V_{GS}		±20	V
Power dissipation	P_{tot}	T_C=25 °C	136	W
Operating and storage temperature	T_j, T_{stg}		-55 ... 175	°C
IEC climatic category; DIN IEC 68-1			55/175/56	

[1)] J-STD20 and JESD22
[2)] See figure 2 for more detailed information
[3)] See figure 7 for more detailed information

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
Thermal resistance, junction - case	R_{thJC}		-	-	1.1	K/W
Electrical characteristics, at T_j=25 °C, unless otherwise specified						
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0 V, I_D=1 mA	80	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=75 µA	2	-	3.5	
Zero gate voltage drain current	I_{DSS}	V_{DS}=80 V, V_{GS}=0 V, T_j=25 °C	-	0.1	1	µA
		V_{DS}=80 V, V_{GS}=0 V, T_j=125 °C	-	1	100	
Gate-source leakage current	I_{GSS}	V_{GS}=20 V, V_{DS}=0 V	-	1	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=10 V, I_D=73 A	-	5.8	7	mΩ
		V_{GS}=6 V, I_D=36 A	-	7.4	12.3	
Dynamic characteristics						
Input capacitance	C_{iss}	V_{GS}=0 V, V_{DS}=25 V, f=1 MHz	-	2920	3880	pF
Output capacitance	C_{oss}		-	1130	1500	
Reverse transfer capacitance	C_{rss}		-	60	-	
Gate Charge Characteristics[4)]						
Gate to source charge	Q_{gs}	V_{DD}=25 V, I_D=80 A, V_{GS}=0 to 10 V	-	16	-	nC
Gate to drain charge	Q_{gd}		-	8	-	
Gate charge total	Q_g		-	41	55	
Reverse Diode						
Diode continous forward current	I_S	T_C=25 °C	-	-	80	A
Diode pulse current	$I_{S,pulse}$		-	-	320	
Diode forward voltage	V_{SD}	V_{GS}=0 V, I_F=73 A, T_j=25 °C	-	1.0	1.2	V

1 Power dissipation

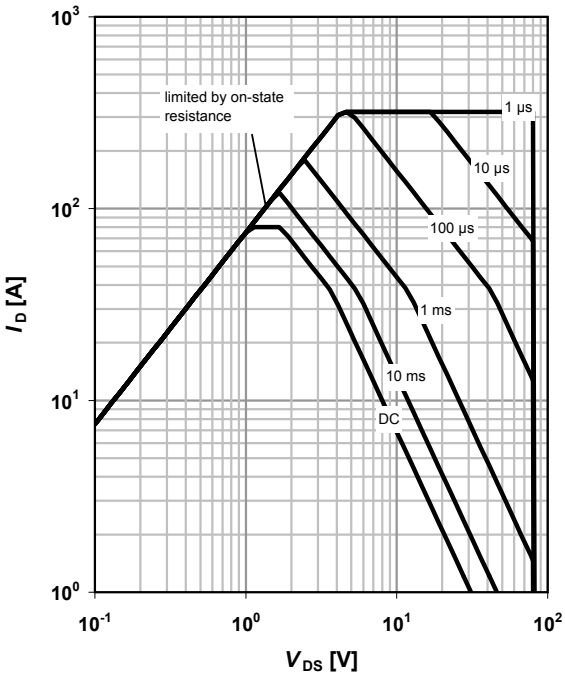
$P_{tot}=f(T_C)$



2 Safe operating area

$I_D=f(V_{DS})$; $T_C=25$ °C; $D=0$

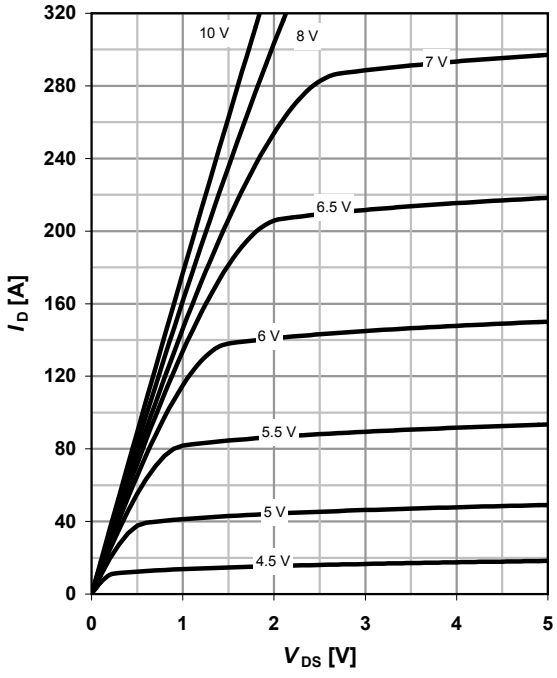
parameter: t_p



3 Typ. output characteristics

$I_D=f(V_{DS})$; $T_j=25$ °C

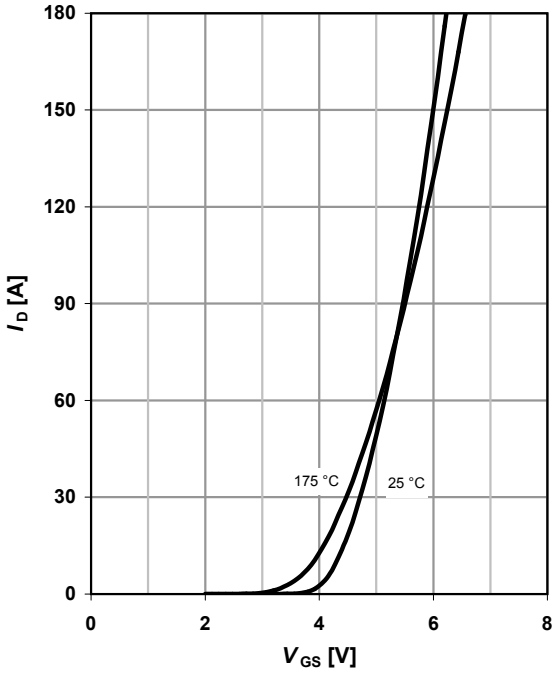
parameter: V_{GS}



4 Typ. transfer characteristics

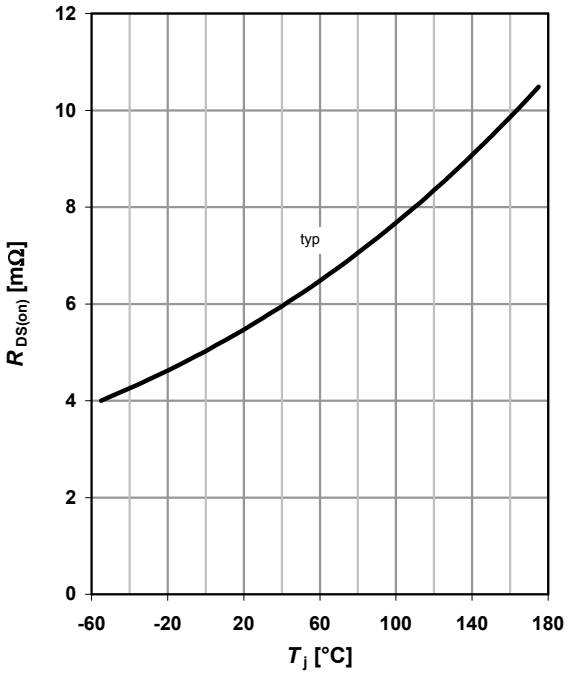
$I_D=f(V_{GS})$; $|V_{DS}|>2|I_D|R_{DS(on)max}$

parameter: T_j



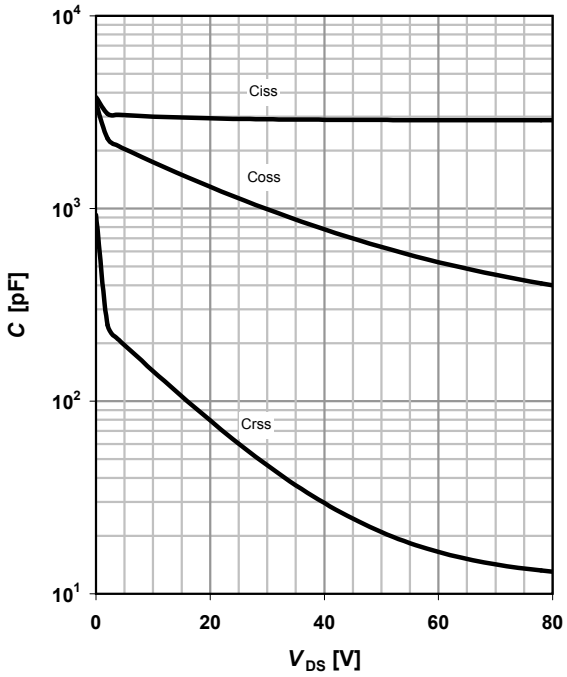
5 Drain-source on-state resistance

$R_{DS(on)}$=f(T_j); I_D=73 A; V_{GS}=10 V



6 Typ. capacitances

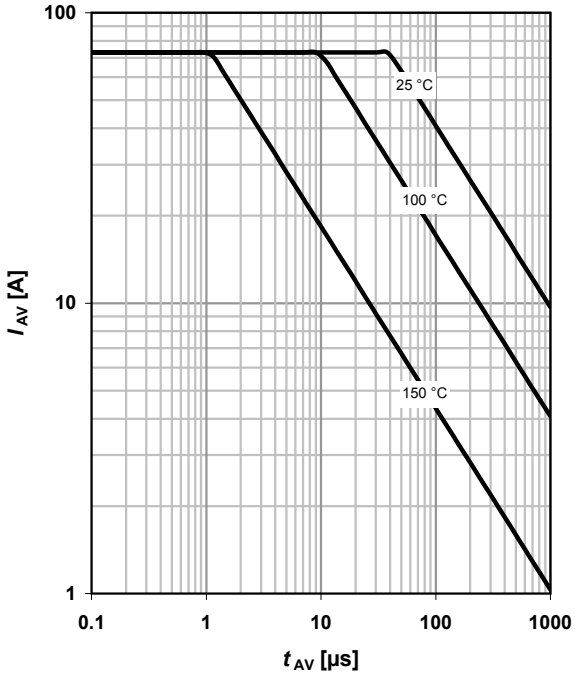
C=f(V_{DS}); V_{GS}=0 V; f=1 MHz



7 Avalanche characteristics

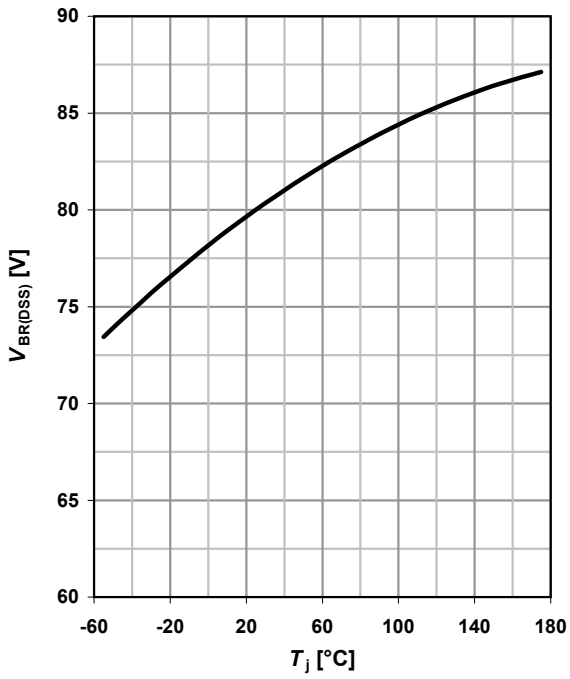
I_{AS}=f(t_{AV}); R_{GS}=25 Ω

parameter: $T_{j(start)}$

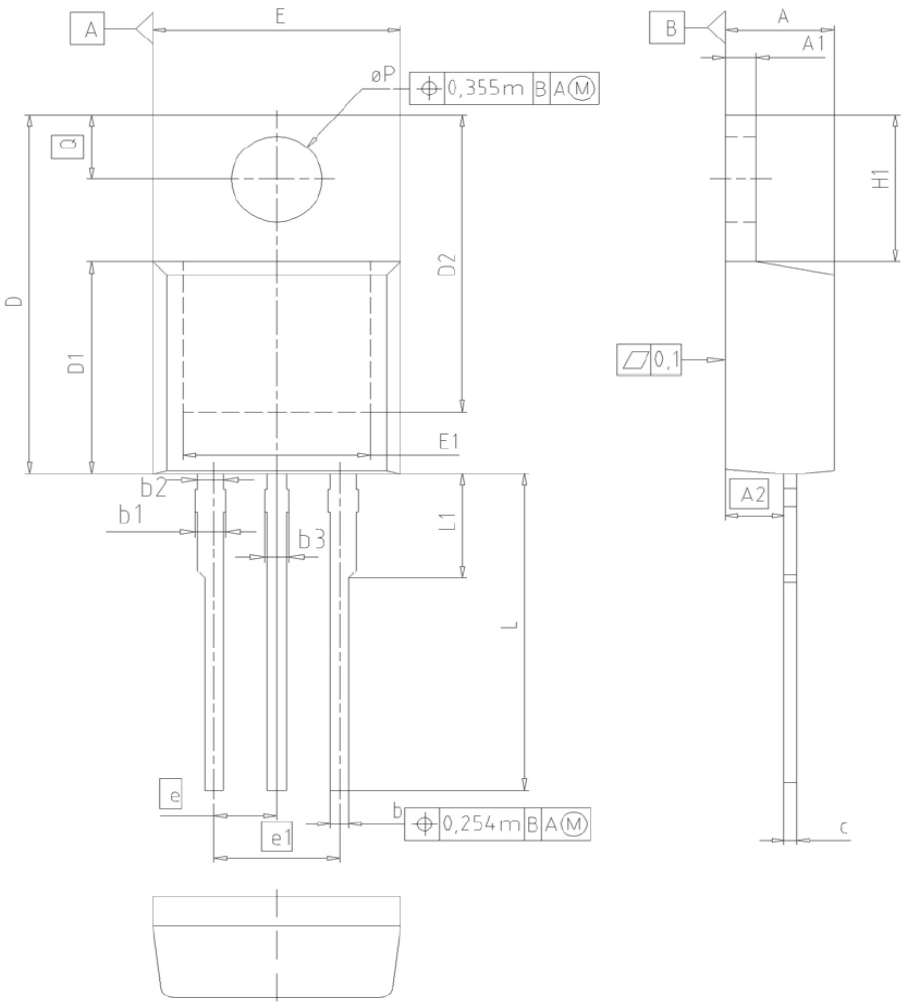


8 Drain-source breakdown voltage

$V_{BR(DSS)}$=f(T_j); I_D=1 mA



PG-TO220-3



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.57	0.169	0.180
A1	1.17	1.40	0.046	0.055
A2	2.15	2.72	0.085	0.107
b	0.65	0.86	0.026	0.034
b1	0.95	1.40	0.037	0.055
b2	0.95	1.15	0.037	0.045
b3	0.65	1.15	0.026	0.045
c	0.33	0.60	0.013	0.024
D	14.81	15.95	0.583	0.628
D1	8.51	9.45	0.335	0.372
D2	12.19	13.10	0.480	0.516
E	9.70	10.36	0.382	0.408
E1	6.50	8.60	0.256	0.339
e	2.54		0.100	
e1	5.08		0.200	
N	3		3	
H1	5.90	6.90	0.232	0.272
L	13.00	14.00	0.512	0.551
L1	-	4.80	-	0.189
øP	3.60	3.89	0.142	0.153
Q	2.60	3.00	0.102	0.118

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