



**Advanced Power
Electronics Corp.**

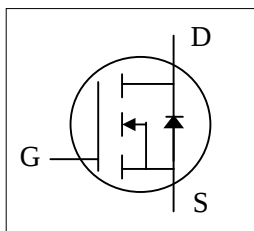
AP30N30WI

Pb Free Plating Product

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

- ▼ 100% Avalanche Test
- ▼ Simple Drive Requirement
- ▼ Lower On-resistance
- ▼ RoHS Compliant

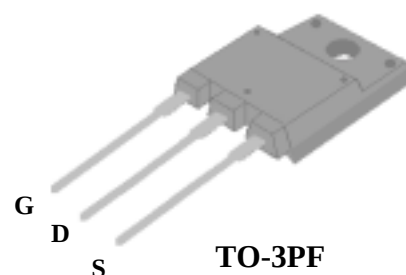


BV_{DSS}	250V
$R_{DS(ON)}$	68m Ω
I_D	30A

Description

AP30N30 from APEC provide the designer with the best combination of fast switching , low on-resistance and cost-effectiveness .

The TO-3PF fullpack eliminates the need for additional insulating hardware in commercial-industrial applications.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	250	V
V_{GS}	Gate-Source Voltage	± 30	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, V_{GS} @ 10V	30	A
I_{DM}	Pulsed Drain Current ¹	120	A
$P_D@T_C=25^\circ C$	Total Power Dissipation	83	W
	Linear Derating Factor	0.7	W/ $^\circ C$
E_{AS}	Single Pulse Avalanche Energy ³	450	mJ
I_{AR}	Avalanche Current	30	A
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Thermal Resistance Junction-case	Max. 1.5	$^\circ C/W$
Rthj-a	Thermal Resistance Junction-ambient	Max. 42	$^\circ C/W$



AP30N30WI

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 =10mA	250	-	-	V
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =10mA	-	0.24	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =15A	-	-	68	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =1mA	1.5	-	3.5	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =15A	-	23	-	S
I _{DSS}	Drain-Source Leakage Current (T _j =25°C)	V _{DS} =250V, V _{GS} =0V	-	-	1	uA
	Drain-Source Leakage Current (T _j =125°C)	V _{DS} =250V, V _{GS} =0V	-	-	200	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = ±30V	-	-	±1	uA
Q _g	Total Gate Charge ²	I _D =15A	-	63	100	nC
Q _{gs}	Gate-Source Charge	V _{DS} =200V	-	19	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =10V	-	14	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =125V	-	28	-	ns
t _r	Rise Time	I _D =15A	-	36	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =10Ω, V _{GS} =10V	-	84	-	ns
t _f	Fall Time	R _D =8.3Ω	-	45	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	4290	6900	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	550	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	6	-	pF
R _g	Gate Resistance	f=1.0MHz	-	1.9	3	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =30A, V _{GS} =0V	-	-	1.5	V
t _{rr}	Reverse Recovery Time ²	I _S =15A, V _{GS} =0V	-	235	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	2.24	-	μC

Notes:

- 1.Pulse width limited by safe operating area.
- 2.Pulse width ≤300us , duty cycle ≤2%.
- 3.Starting T_j=25°C , V_{DD}=50V , L=1mH , R_G=25Ω , I_{AS}=30A.

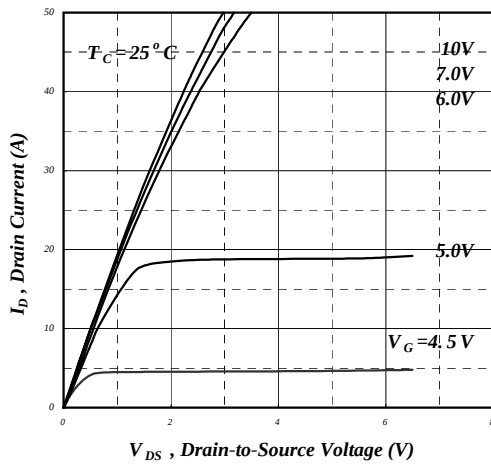


Fig 1. Typical Output Characteristics

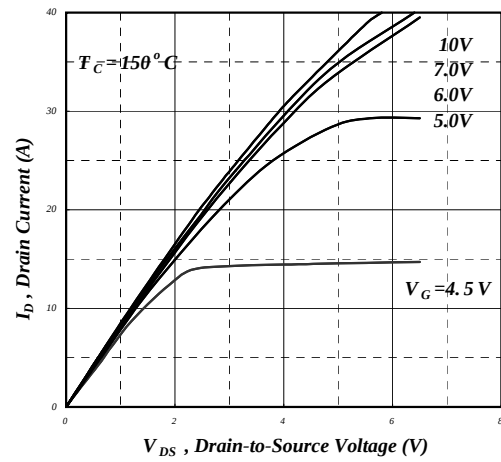


Fig 2. Typical Output Characteristics

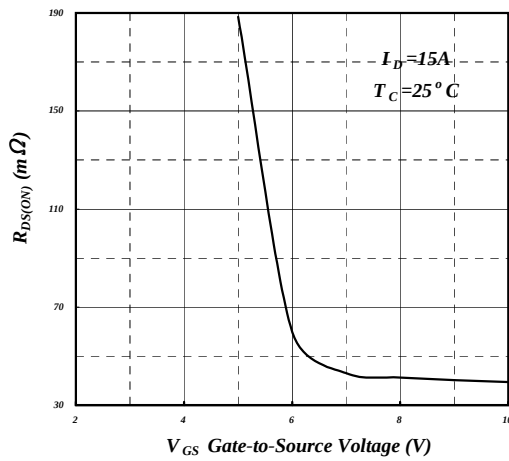


Fig 3. On-Resistance v.s. Gate Voltage

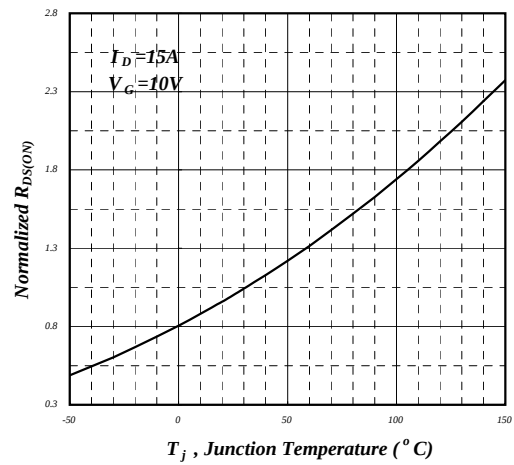


Fig 4. Normalized On-Resistance v.s. Junction Temperature

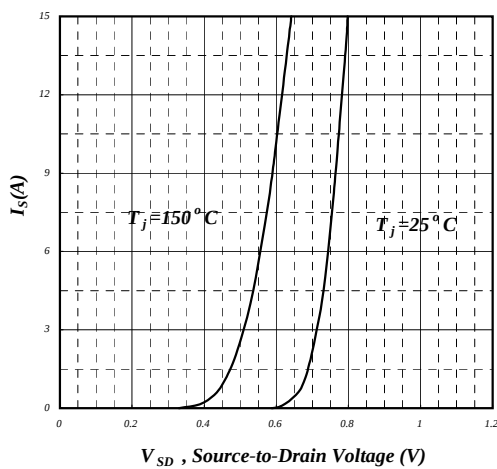


Fig 5. Forward Characteristic of Reverse Diode

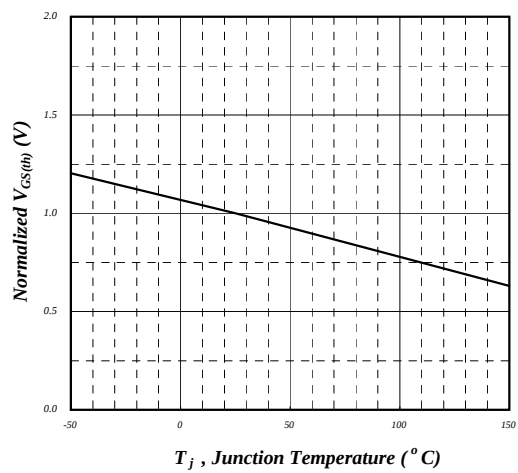


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



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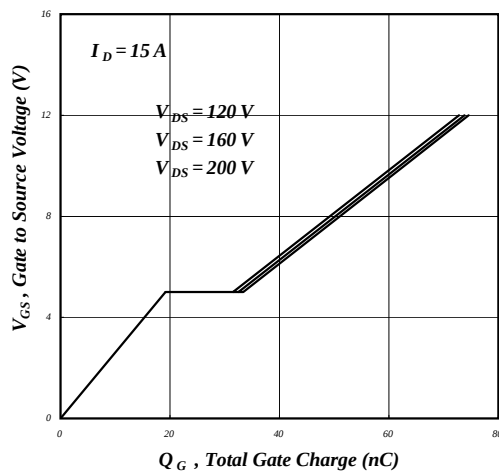


Fig 7. Gate Charge Characteristics

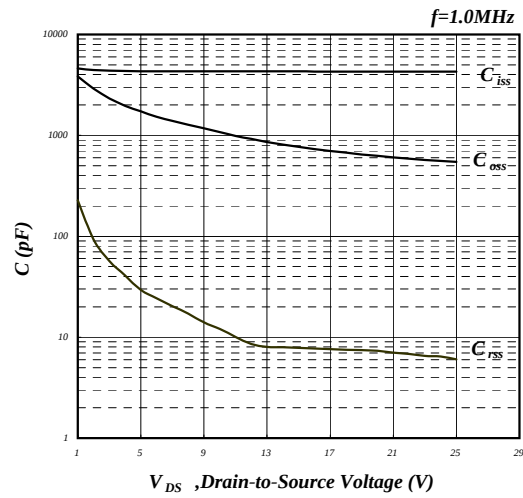


Fig 8. Typical Capacitance Characteristics

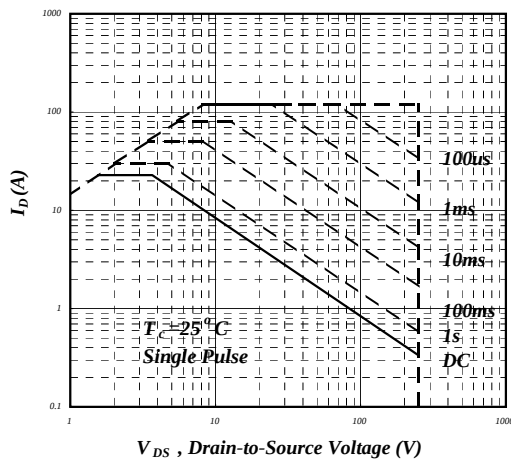


Fig 9. Maximum Safe Operating Area

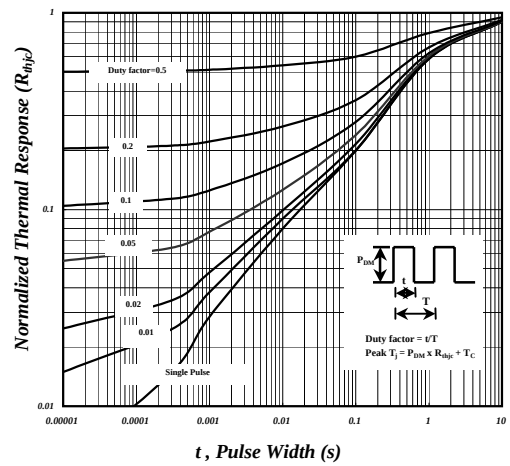


Fig 10. Effective Transient Thermal Impedance

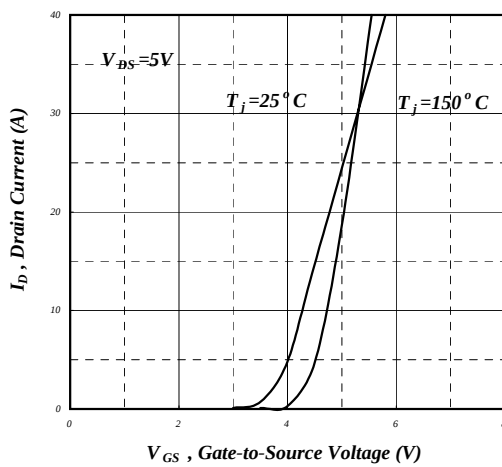


Fig 11. Transfer Characteristics

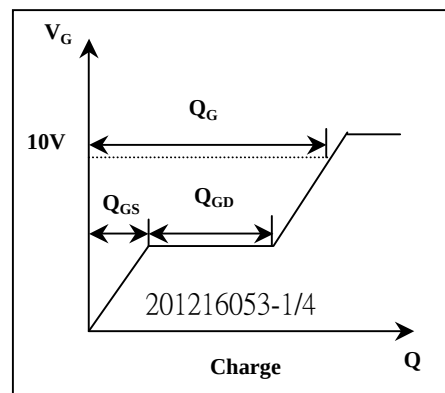


Fig 12. Gate Charge Waveform