



Advanced Power
Electronics Corp.

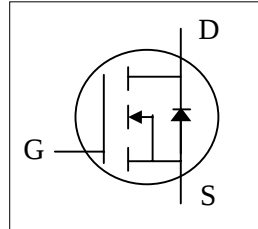
AP15N03GI

RoHS-compliant Product

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

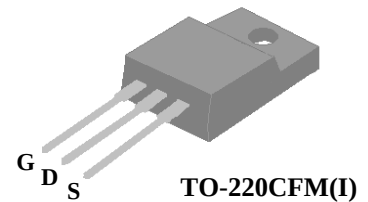
- ▼ Low Gate Charge
- ▼ Simple Drive Requirement
- ▼ Fast Switching Characteristic



BV_{DS}	30V
$R_{DS(ON)}$	80m Ω
I_D	15A

Description

Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.



The TO-220CFM isolation package is widely preferred for commercial-industrial through hole applications.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^{\circ}\text{C}$	Continuous Drain Current, V_{GS} @ 10V	15	A
$I_D@T_C=100^{\circ}\text{C}$	Continuous Drain Current, V_{GS} @ 10V	9	A
I_{DM}	Pulsed Drain Current ¹	50	A
$P_D@T_C=25^{\circ}\text{C}$	Total Power Dissipation	20.8	W
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}\text{C}$

Thermal Data

Symbol	Parameter	Value	Unit
R_{thj-c}	Maximum Thermal Resistance, Junction-case	6.0	$^{\circ}\text{C}/\text{W}$
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient	65	$^{\circ}\text{C}/\text{W}$



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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 =250uA	30	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =8A	-	-	80	mΩ
		V _{GS} =4.5V, I _D =6A	-	-	100	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =8A	-	7	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V	-	-	1	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =8A	-	5	8	nC
Q _{gs}	Gate-Source Charge	V _{DS} =24V	-	1	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =5V	-	3	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =15V	-	5	-	ns
t _r	Rise Time	I _D =8A	-	22	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω, V _{GS} =10V	-	12	-	ns
t _f	Fall Time	R _D =1.9Ω	-	3.3	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	160	260	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	107	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	32	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =8A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time ²	I _S =8A, V _{GS} =0V,	-	37	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	47	-	nC

Notes:

- 1.Pulse width limited by Maximum junction temperature.
- 2.Pulse test

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

APEC DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

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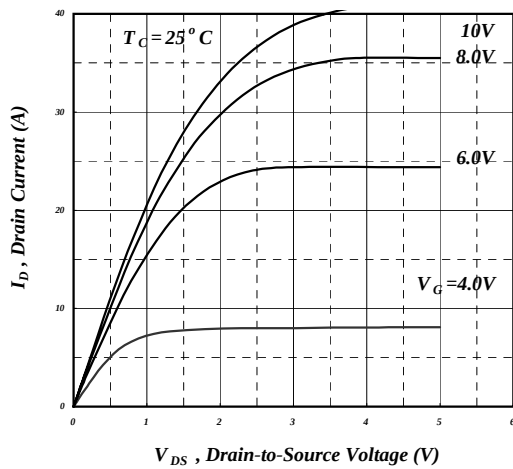


Fig 1. Typical Output Characteristics

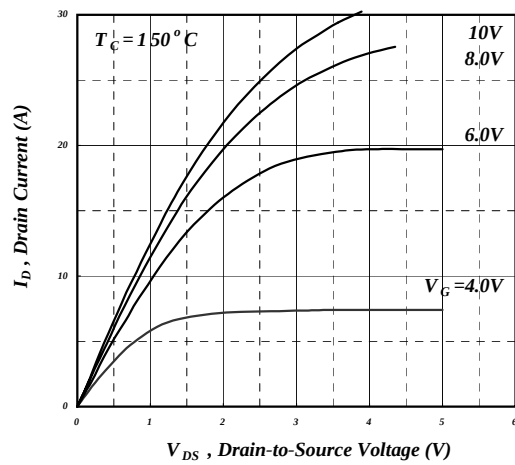


Fig 2. Typical Output Characteristics

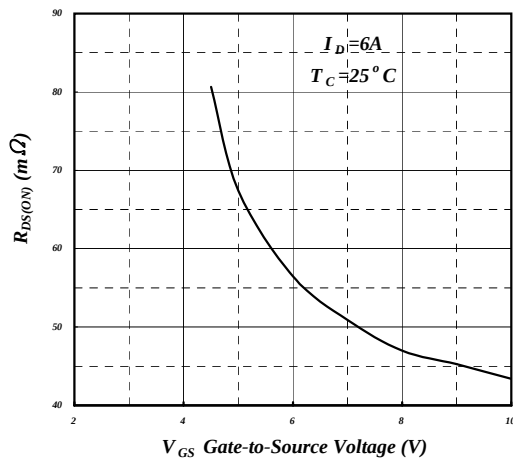


Fig 3. On-Resistance v.s. Gate Voltage

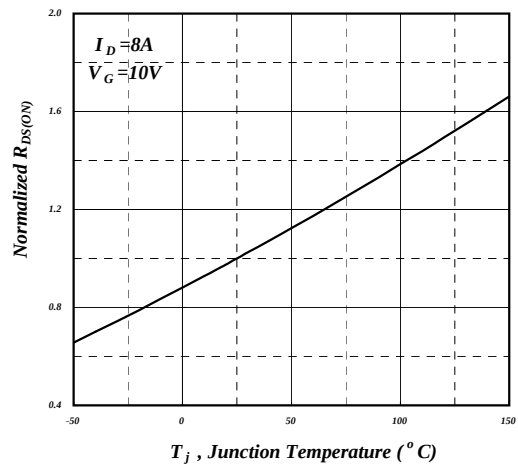


Fig 4. Normalized On-Resistance v.s. Junction Temperature

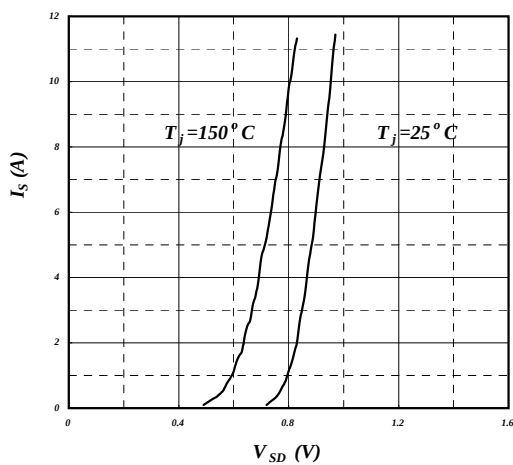


Fig 5. Forward Characteristic of Reverse Diode

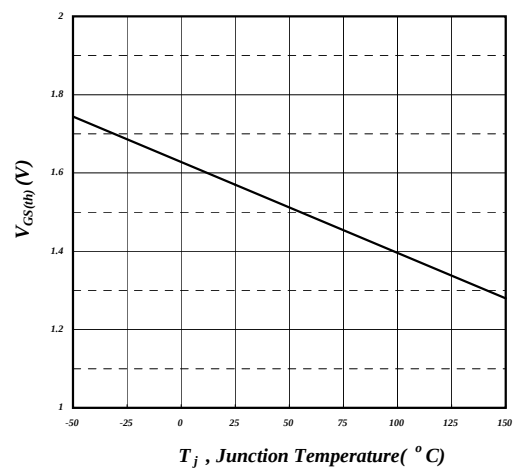


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



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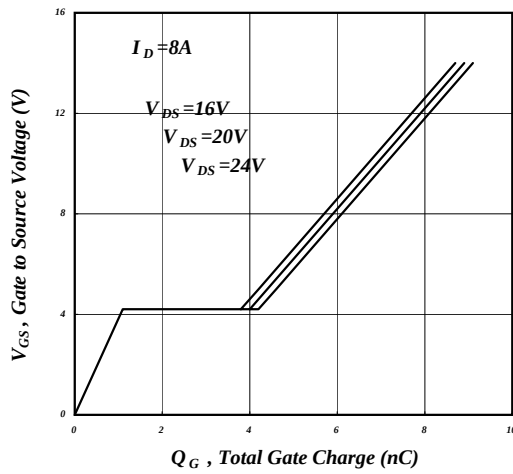


Fig 7. Gate Charge Characteristics

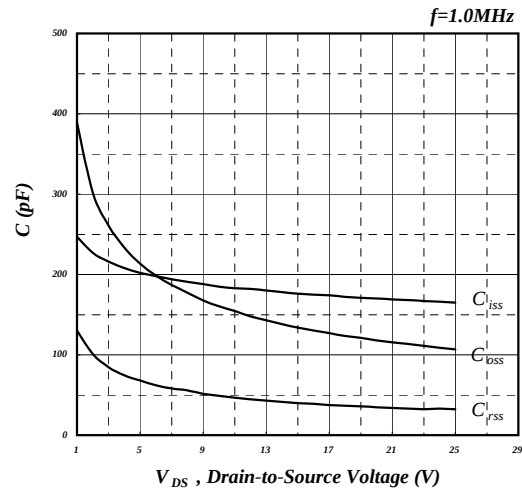


Fig 8. Typical Capacitance Characteristics

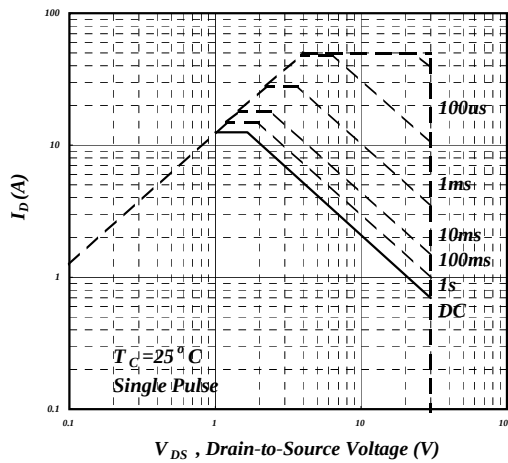


Fig 9. Maximum Safe Operating Area

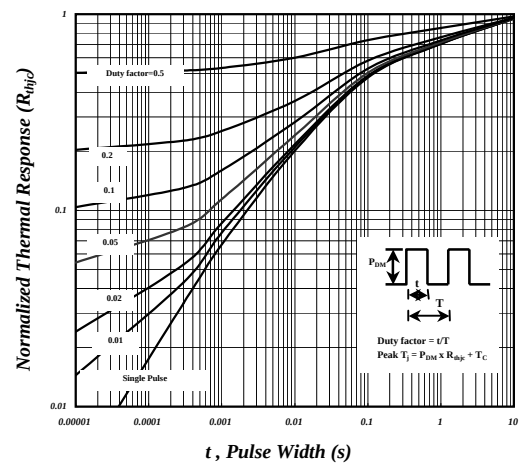


Fig 10. Effective Transient Thermal Impedance

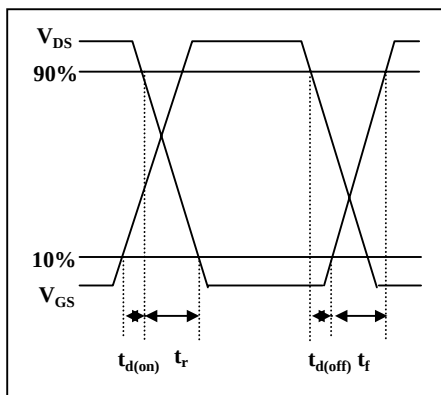


Fig 11. Switching Time Waveform

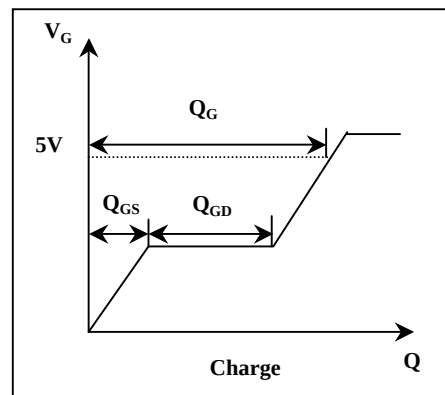


Fig 12. Gate Charge Waveform