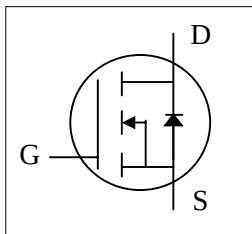




- ▼ Simple Drive Requirement
- ▼ Low Gate Charge
- ▼ Fast Switching Characteristic
- ▼ RoHS Compliant & Halogen-Free

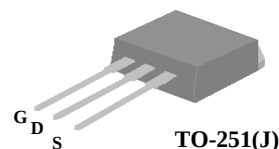
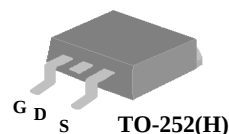


BV_{DSS}	30V
$R_{DS(ON)}$	12m Ω
I_D	45A

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-252 package is widely preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters. The through-hole version (AP60T03GJ) are available for low-profile 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	45	A
$I_D@T_C=100^{\circ}\text{C}$	Continuous Drain Current, V_{GS} @ 10V	32	A
I_{DM}	Pulsed Drain Current ¹	120	A
$P_D@T_C=25^{\circ}\text{C}$	Total Power Dissipation	44	W
	Linear Derating Factor	0.3	W/ $^{\circ}\text{C}$
$P_D@T_A=25^{\circ}\text{C}$	Total Power Dissipation ³	2.4	W
T_{STG}	Storage Temperature Range	-55 to 175	$^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-55 to 175	$^{\circ}\text{C}$

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	3.4	$^{\circ}\text{C}/\text{W}$
Rthj-a	Maximum Thermal Resistance, Junction-ambient (PCB mount) ³	62.5	$^{\circ}\text{C}/\text{W}$
Rthj-a	Maximum Thermal Resistance, Junction-ambient	110	$^{\circ}\text{C}/\text{W}$



AP60T03GH/J-HF

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
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =1mA	-	0.03	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =20A	-	-	12	mΩ
		V _{GS} =4.5V, I _D =15A	-	-	25	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance ²	V _{DS} =10V, I _D =10A	-	25	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V	-	-	1	uA
	Drain-Source Leakage Current (T _j =125°C)	V _{DS} =24V, V _{GS} =0V	-	-	250	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = ±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =20A	-	12	20	nC
Q _{gs}	Gate-Source Charge	V _{DS} =20V	-	4	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	7	-	nC
Q _{oss}	Output Charge	V _{DD} =15V, V _{GS} =0V	-	10	16	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =15V	-	9	-	ns
t _r	Rise Time	I _D =20A	-	58	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω, V _{GS} =10V	-	18	-	ns
t _f	Fall Time	R _D =0.75Ω	-	6	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	1135	1820	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	200	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	135	-	pF
R _g	Gate Resistance	f=1.0MHz	-	1.4	2.1	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =45A, V _{GS} =0V	-	-	1.3	V
t _{rr}	Reverse Recovery Time ²	I _S =20A, V _{GS} =0V,	-	24	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	16	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board

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.

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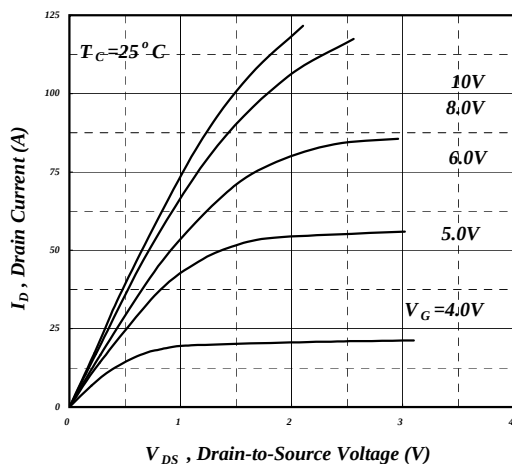


Fig 1. Typical Output Characteristics

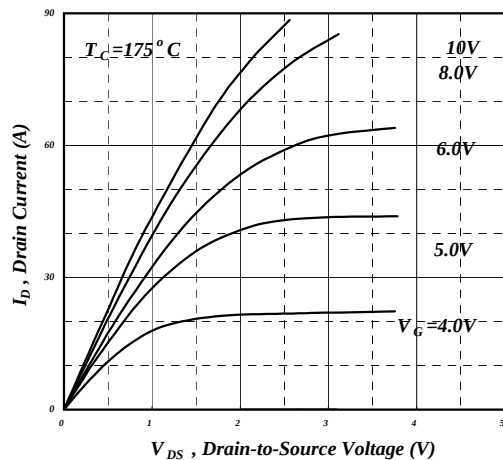


Fig 2. Typical Output Characteristics

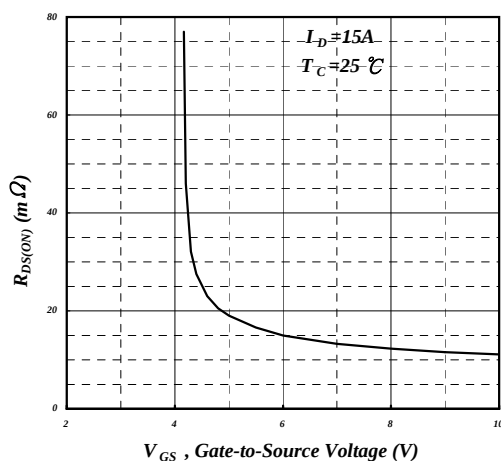


Fig 3. On-Resistance v.s. Gate Voltage

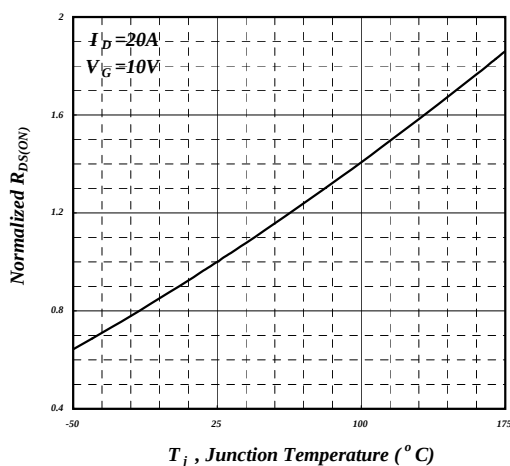


Fig 4. Normalized On-Resistance v.s. Junction Temperature

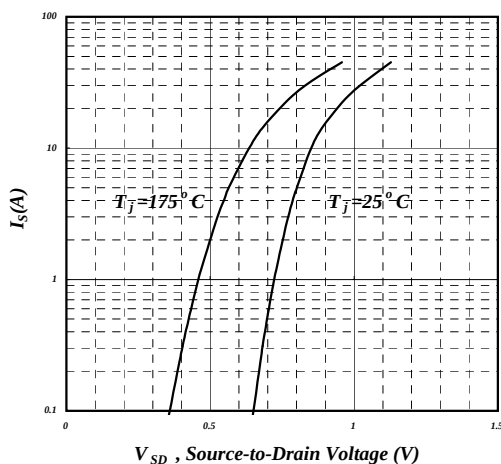


Fig 5. Forward Characteristic of Reverse Diode

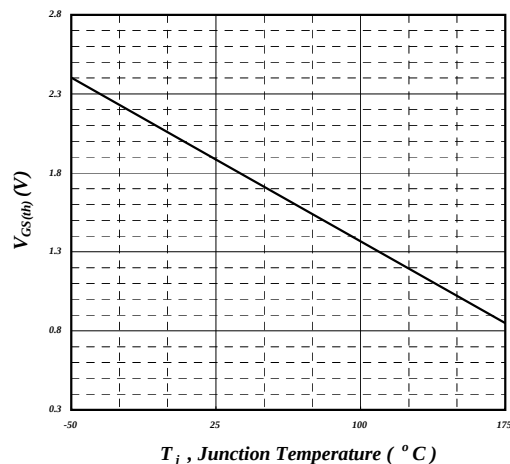


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



AP60T03GH/J-HF

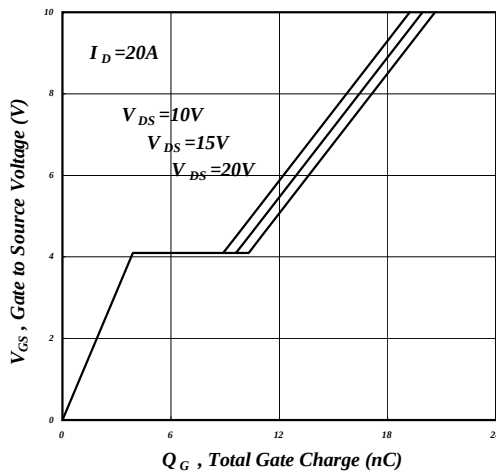


Fig7. Gate Charge Characteristics

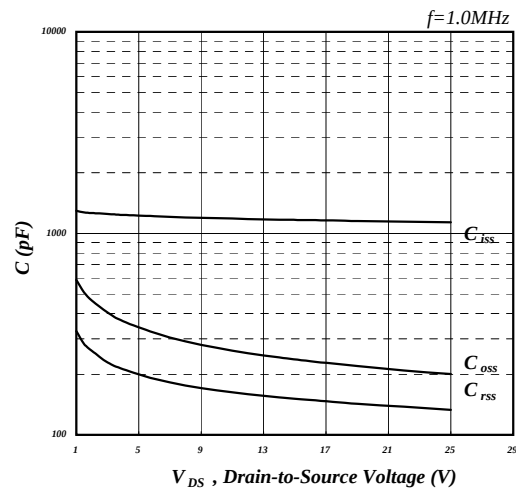


Fig 8. Typical Capacitance Characteristics

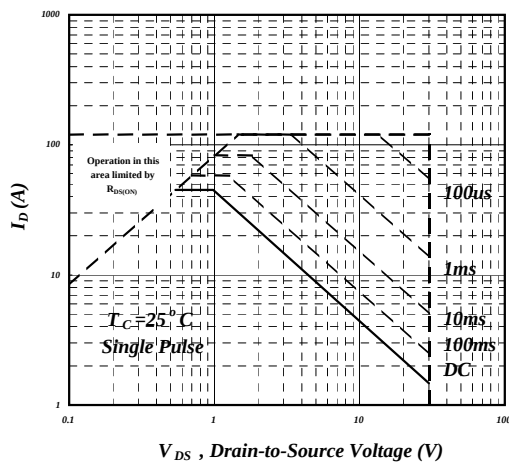


Fig 9. Maximum Safe Operating Area

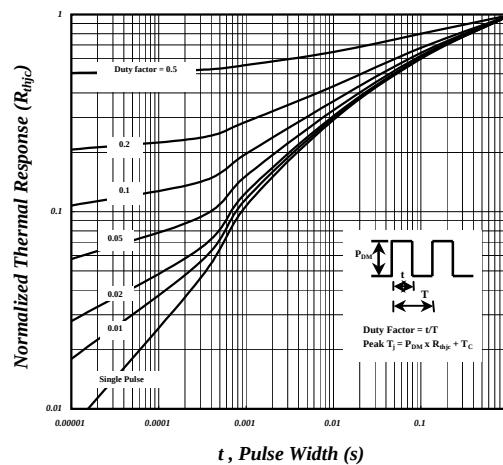


Fig10. Effective Transient Thermal Impedance

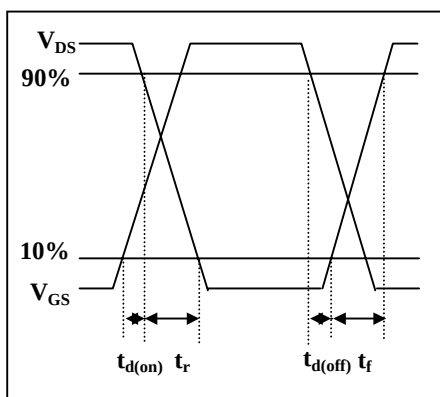


Fig 11. Switching Time Waveform

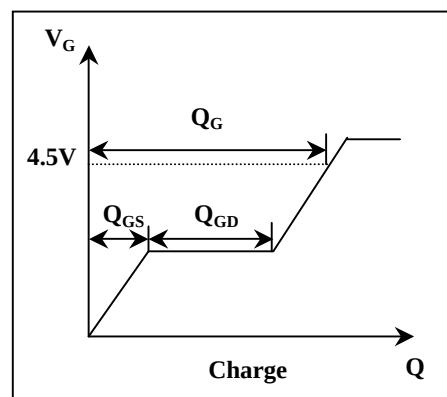


Fig 12. Gate Charge Waveform