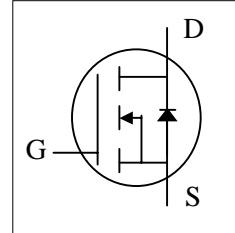
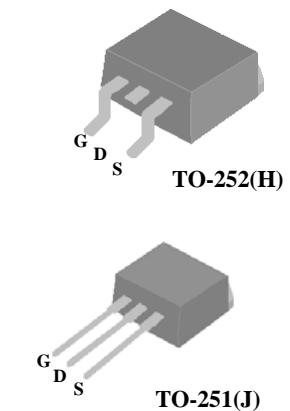




- ▼ Low On-resistance
- ▼ Simple Drive Requirement
- ▼ Fast Switching Characteristic
- ▼ RoHS Compliant & Halogen-Free



BV_{DSS}	30V
$R_{DS(ON)}$	6mΩ
I_D	75A



Description

AP83T03 series are from Advanced Power innovative design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The TO-252 package is widely preferred for all commercial-industrial surface mount applications using infrared reflow technique and suited for high current application due to the low connection resistance. The through-hole version (AP83T03GJ) are available for low-profile applications.

Absolute Maximum Ratings@ $T_j=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_c=25^\circ\text{C}$	Drain Current, $V_{GS} @ 10\text{V}$	75	A
$I_D @ T_c=100^\circ\text{C}$	Drain Current, $V_{GS} @ 10\text{V}$	53	A
I_{DM}	Pulsed Drain Current ¹	240	A
$P_D @ T_c=25^\circ\text{C}$	Total Power Dissipation	60	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Value	Units
R_{thj-c}	Maximum Thermal Resistance, Junction-case	2.5	°C/W
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient (PCB mount) ³	62.5	°C/W
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient	110	°C/W

AP83T03GH/J-HF

Electrical Characteristics@ $T_j=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$\text{V}_{\text{GS}}=0\text{V}, \text{I}_D=250\mu\text{A}$	30	-	-	V
$\text{R}_{\text{DS}(\text{ON})}$	Static Drain-Source On-Resistance ²	$\text{V}_{\text{GS}}=10\text{V}, \text{I}_D=40\text{A}$	-	-	6	$\text{m}\Omega$
		$\text{V}_{\text{GS}}=4.5\text{V}, \text{I}_D=30\text{A}$	-	-	11	$\text{m}\Omega$
$\text{V}_{\text{GS}(\text{th})}$	Gate Threshold Voltage	$\text{V}_{\text{DS}}=\text{V}_{\text{GS}}, \text{I}_D=250\mu\text{A}$	1	-	3	V
g_{fs}	Forward Transconductance	$\text{V}_{\text{DS}}=10\text{V}, \text{I}_D=30\text{A}$	-	55	-	S
I_{DSS}	Drain-Source Leakage Current	$\text{V}_{\text{DS}}=24\text{V}, \text{V}_{\text{GS}}=0\text{V}$	-	-	10	μA
I_{GSS}	Gate-Source Leakage	$\text{V}_{\text{GS}}=\pm 20\text{V}, \text{V}_{\text{DS}}=0\text{V}$	-	-	± 100	nA
Q_g	Total Gate Charge	$\text{I}_D=30\text{A}$	-	21	34	nC
Q_{gs}	Gate-Source Charge		-	3.5	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge		-	15	-	nC
$t_{\text{d}(\text{on})}$	Turn-on Delay Time	$\text{V}_{\text{DS}}=15\text{V}$	-	9.5	-	ns
t_r	Rise Time	$\text{I}_D=30\text{A}$	-	86	-	ns
$t_{\text{d}(\text{off})}$	Turn-off Delay Time	$\text{R}_G=3.3\Omega$	-	24	-	ns
t_f	Fall Time	$\text{V}_{\text{GS}}=10\text{V}$	-	14	-	ns
C_{iss}	Input Capacitance	$\text{V}_{\text{GS}}=0\text{V}$	-	1150	1840	pF
C_{oss}	Output Capacitance		-	340	-	pF
C_{rss}	Reverse Transfer Capacitance		-	250	-	pF
R_g	Gate Resistance	$f=1.0\text{MHz}$	-	0.9	-	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ²	$\text{I}_S=30\text{A}, \text{V}_{\text{GS}}=0\text{V}$	-	-	1.2	V
t_{rr}	Reverse Recovery Time	$\text{I}_S=10\text{A}, \text{V}_{\text{GS}}=0\text{V},$ $d\text{I}/dt=100\text{A}/\mu\text{s}$	-	29	-	ns
			-	22	-	nC

Notes:

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

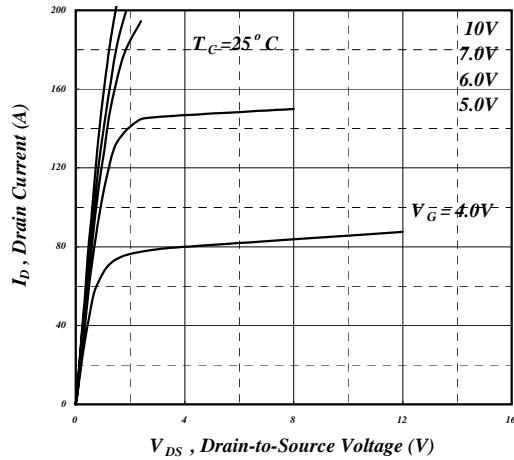


Fig 1. Typical Output Characteristics

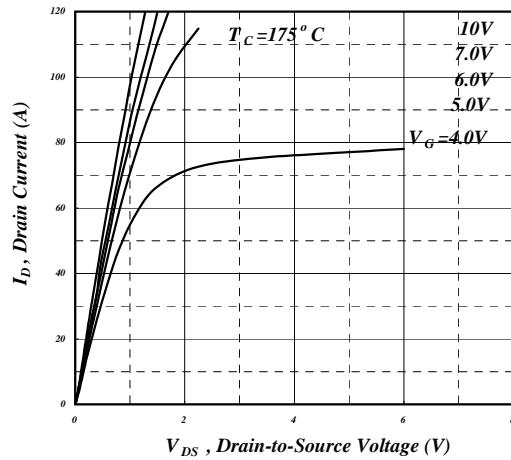


Fig 2. Typical Output Characteristics

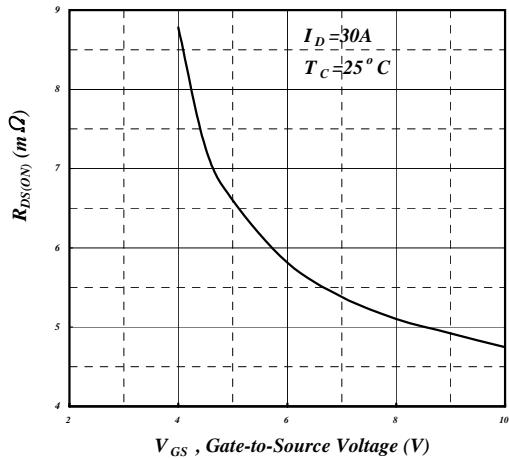


Fig 3. On-Resistance v.s. Gate Voltage

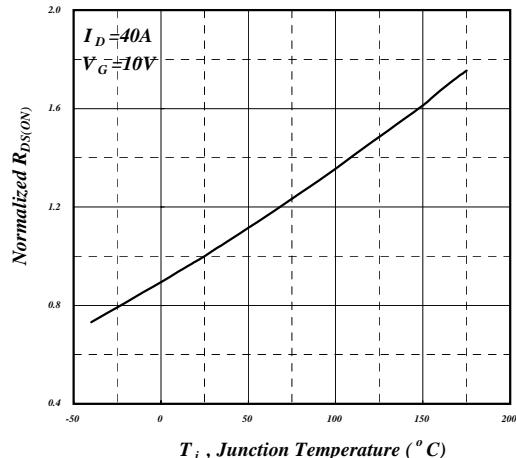


Fig 4. Normalized On-Resistance v.s. Junction Temperature

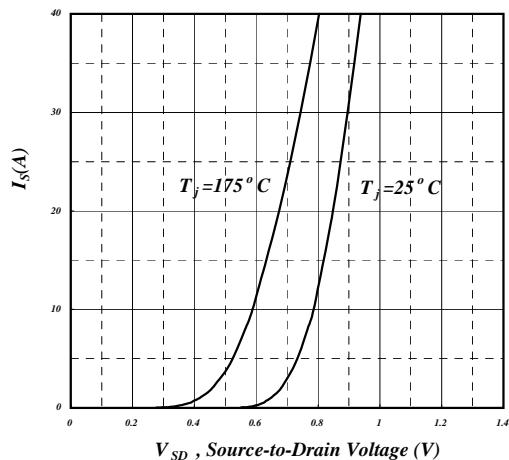


Fig 5. Forward Characteristic of Reverse Diode

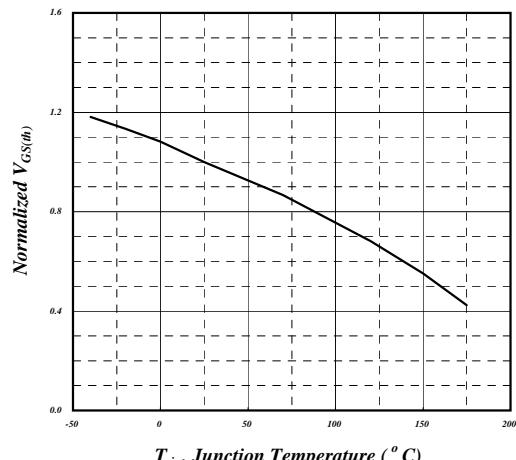


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

AP83T03GH/J-HF

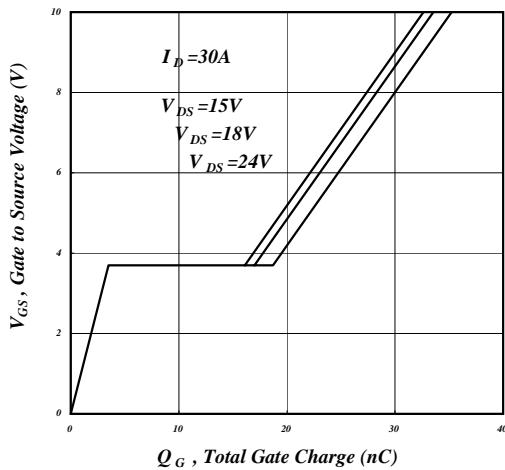


Fig 7. Gate Charge Characteristics

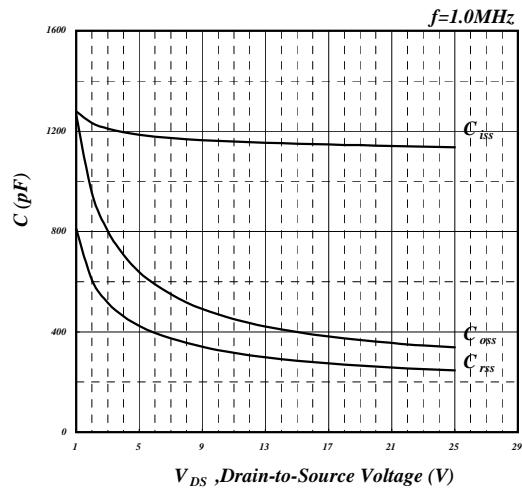


Fig 8. Typical Capacitance Characteristics

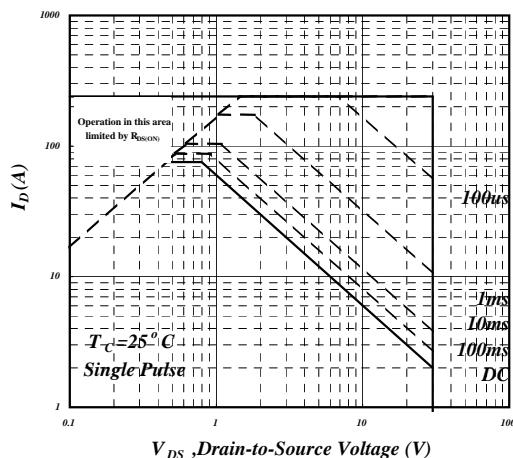


Fig 9. Maximum Safe Operating Area

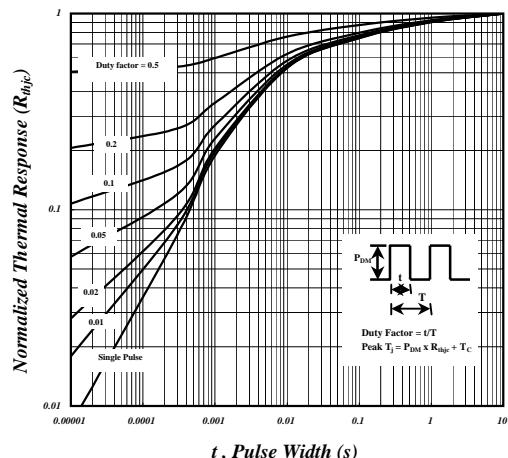


Fig 10. Effective Transient Thermal Impedance

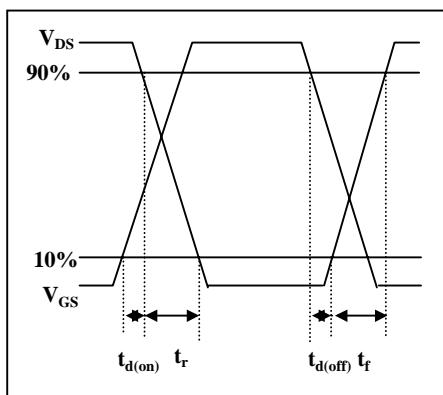


Fig 11. Switching Time Waveform

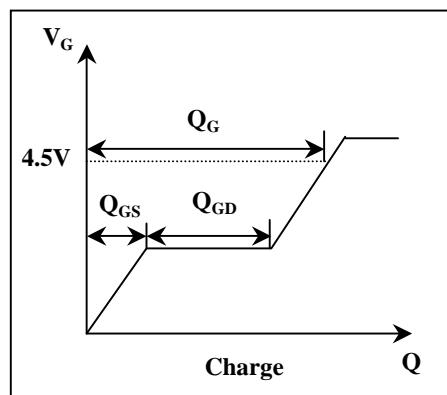


Fig 12. Gate Charge Waveform