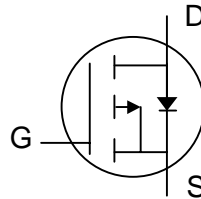




**P-channel Enhancement-mode Power MOSFET**

- Low Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic
- RoHS-compliant, halogen-free



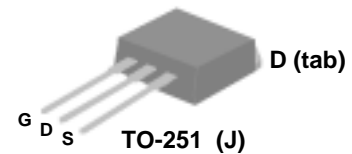
$BV_{DSS}$	-60V
$R_{DS(ON)}$	90mΩ
$I_D$	-15A

**Description**

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

The AP9575GH-HF-3 is in the TO-252 package, which is widely used for commercial and industrial surface-mount applications, and is well suited for low voltage applications such as DC/DC converters.

The AP9575GJ-HF-3 is in the TO-251 through-hole package which is used where a small PCB footprint or an attached heatsink is required.



**Absolute Maximum Ratings**

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	-60	V
$V_{GS}$	Gate-Source Voltage	±25	V
$I_D$ at $T_C=25^{\circ}C$	Continuous Drain Current	-15	A
$I_D$ at $T_C=100^{\circ}C$	Continuous Drain Current	-9.5	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	-45	A
$P_D$ at $T_C=25^{\circ}C$	Total Power Dissipation	31.3	W
	Linear Derating Factor	0.25	W/°C
$P_D$ at $T_A=25^{\circ}C$	Total Power Dissipation <sup>3</sup>	2	W
$T_{STG}$	Storage Temperature Range	-55 to 150	°C
$T_J$	Operating Junction Temperature Range	-55 to 150	°C

**Thermal Data**

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	4.0	°C/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient (PCB mount) <sup>3</sup>	62.5	°C/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient	110	°C/W

**Ordering Information**

**AP9575GH-HF-3TR** : in RoHS-compliant halogen-free TO-252, shipped on tape and reel (3000 pcs/reel)

**AP9575GJ-HF-3TB** : in RoHS-compliant halogen-free TO-251, shipped in tubes (80pcs/tube)



**Electrical Specifications at  $T_j=25^\circ\text{C}$  (unless otherwise specified)**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=-10V, I_D=-12A$	-	-	90	m $\Omega$
		$V_{GS}=-4.5V, I_D=-9A$	-	-	120	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-	-3	V
$g_{fs}$	Forward Transconductance	$V_{DS}=-10V, I_D=-9A$	-	14	-	S
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=-60V, V_{GS}=0V$	-	-	-10	$\mu A$
	Drain-Source Leakage Current ( $T_j=125^\circ\text{C}$ )	$V_{DS}=-48V, V_{GS}=0V$	-	-	-250	$\mu A$
$I_{GSS}$	Gate-Source Leakage	$V_{GS}=\pm 25V, V_{DS}=0V$	-	-	$\pm 100$	nA
$Q_g$	Total Gate Charge <sup>2</sup>	$I_D=-9A$	-	14	27	nC
$Q_{gs}$	Gate-Source Charge	$V_{DS}=-48V$	-	3	-	nC
$Q_{gd}$	Gate-Drain ("Miller") Charge	$V_{GS}=-4.5V$	-	8	-	nC
$t_{d(on)}$	Turn-on Delay Time <sup>2</sup>	$V_{DS}=-30V$	-	8	-	ns
$t_r$	Rise Time	$I_D=-9A$	-	17	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=3.3\Omega, V_{GS}=-10V$	-	36	-	ns
$t_f$	Fall Time	$R_D=3.3\Omega$	-	41	-	ns
$C_{iss}$	Input Capacitance	$V_{GS}=0V$	-	1100	2660	pF
$C_{oss}$	Output Capacitance	$V_{DS}=-25V$	-	115	-	pF
$C_{rss}$	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	90	-	pF

**Source-Drain Diode**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{SD}$	Forward On Voltage <sup>2</sup>	$I_S=-9A, V_{GS}=0V$	-	-	-1.2	V
$t_{rr}$	Reverse Recovery Time <sup>2</sup>	$I_S=-9A, V_{GS}=0V,$	-	38	-	ns
$Q_{rr}$	Reverse Recovery Charge	$di/dt=-100A/\mu s$	-	61	-	nC

**Notes:**

1. Pulse width limited by maximum junction temperature.
2. Pulse test - pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$
3. Surface mounted on 1 in copper pad of FR4 board

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

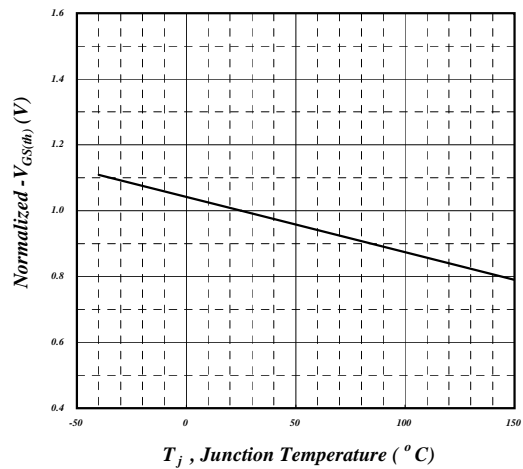
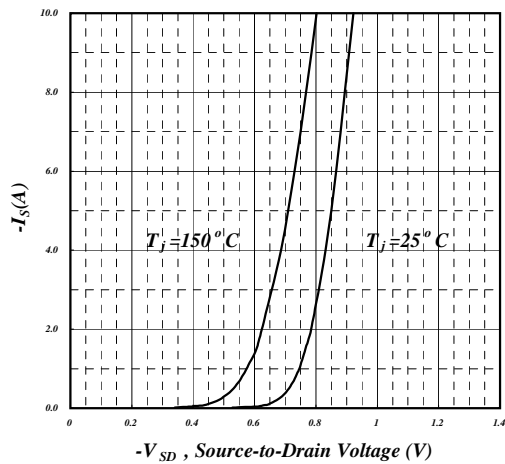
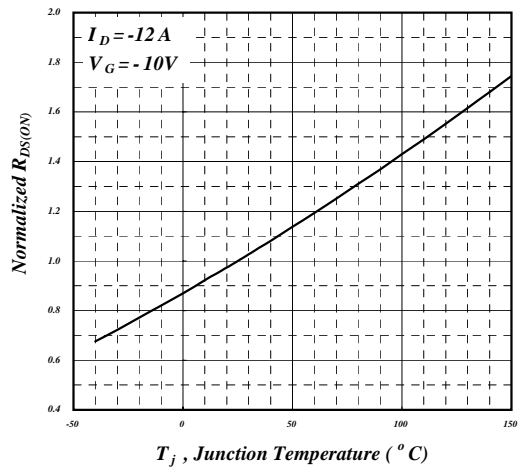
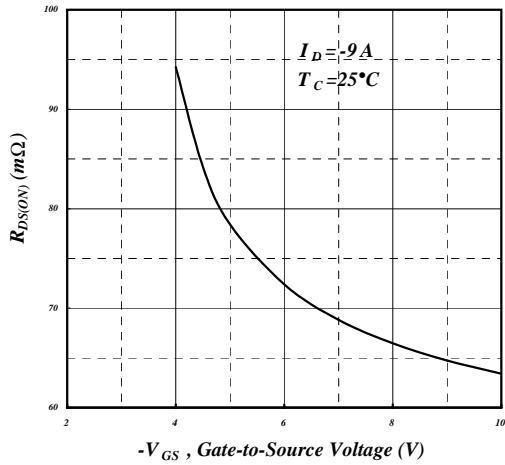
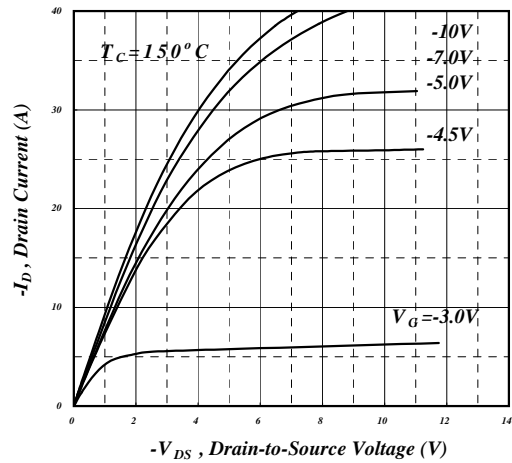
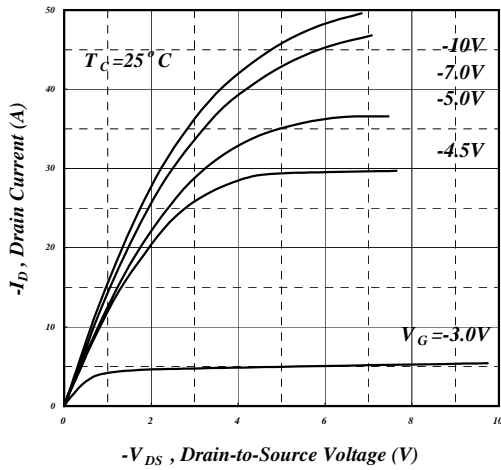
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Typical Electrical Characteristics





Typical Electrical Characteristics (cont.)

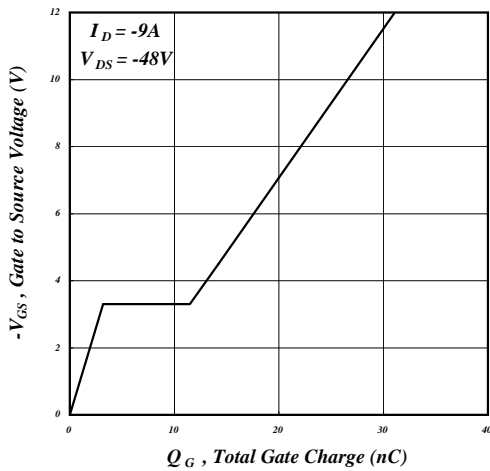


Fig 7. Gate Charge Characteristics

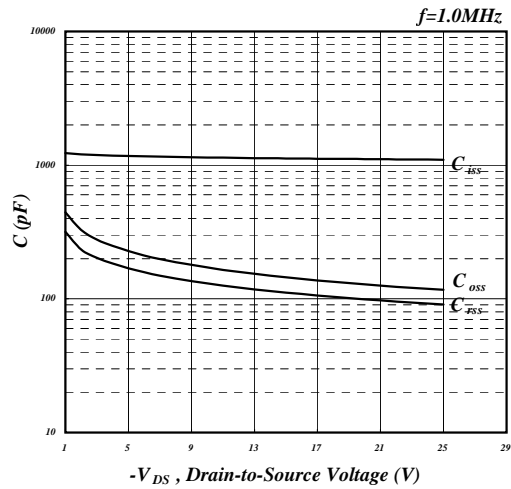


Fig 8. Typical Capacitance Characteristics

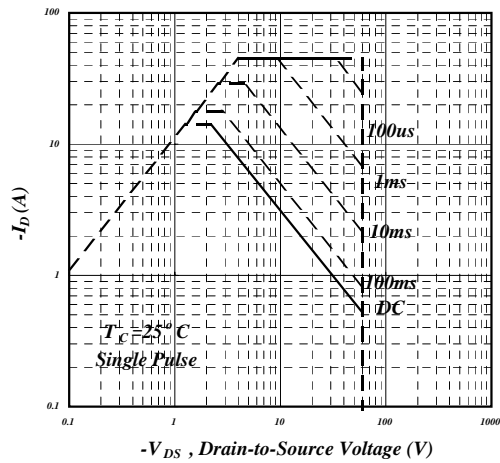


Fig 9. Maximum Safe Operating Area

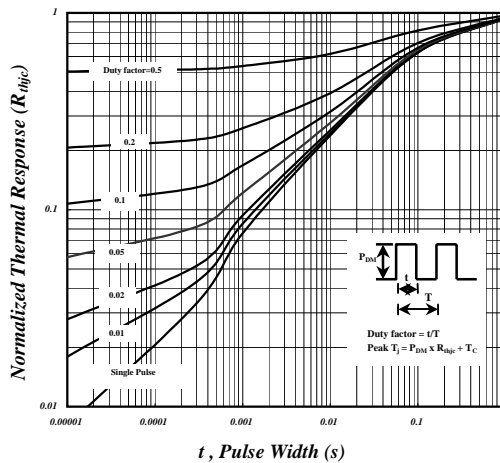


Fig 10. Effective Transient Thermal Impedance

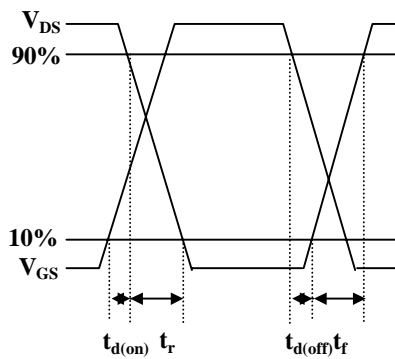


Fig 11. Switching Time Waveform

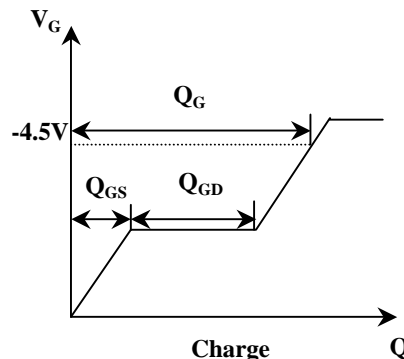
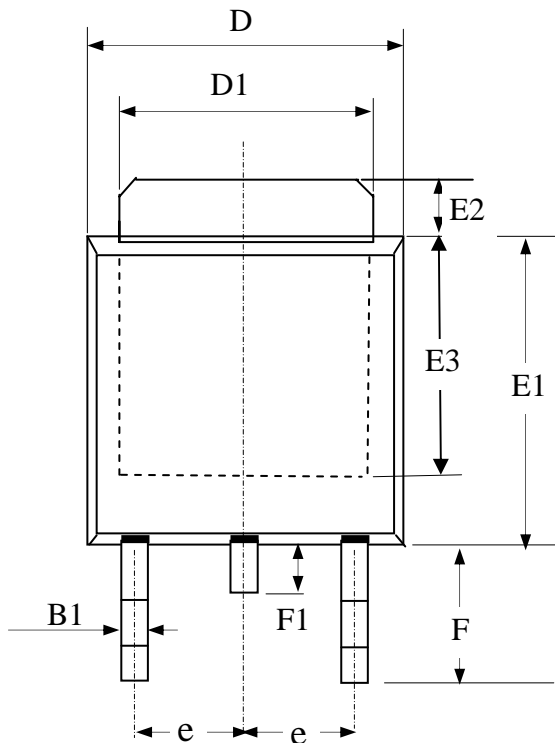


Fig 12. Gate Charge Waveform



**Package Dimensions: TO-252**



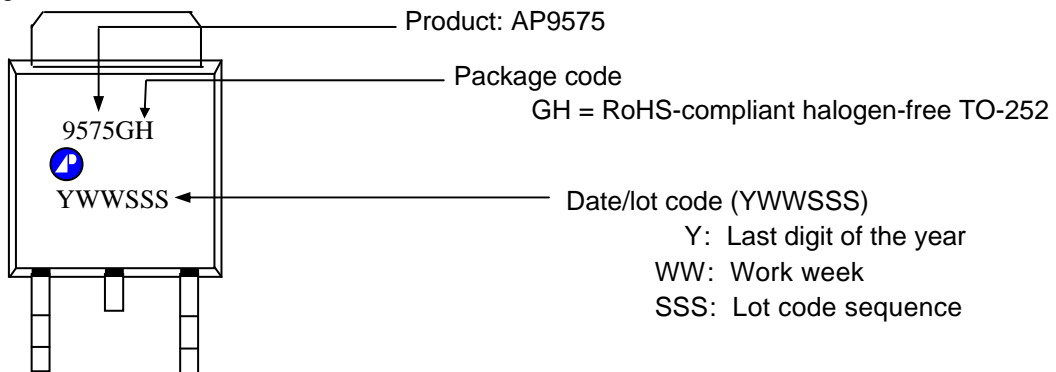
SYMBOLS	Millimeters		
	MIN	NOM	MAX
A2	1.80	2.30	2.80
A3	0.40	0.50	0.60
B1	0.40	0.70	1.00
D	6.00	6.50	7.00
D1	4.80	5.35	5.90
E3	3.50	4.00	4.50
F	2.20	2.63	3.05
F1	0.50	0.85	1.20
E1	5.10	5.70	6.30
E2	0.50	1.10	1.80
e	--	2.30	--
C	0.35	0.50	0.65

1. All dimensions are in millimeters.
2. Dimensions do not include mold protrusions.



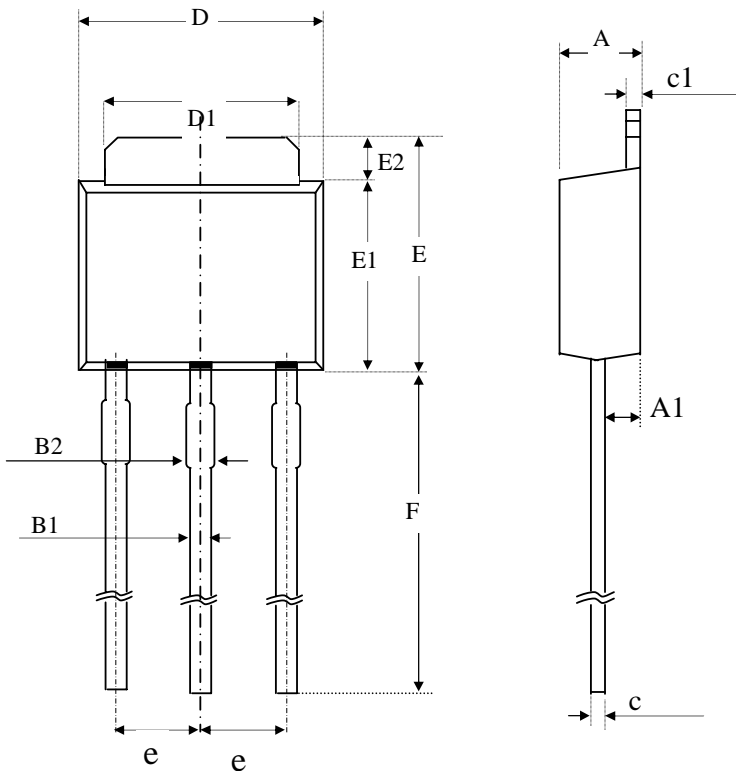
**Marking Information**

Laser Marking





**Package Dimensions: TO-251**



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	2.20	2.30	2.40
A1	0.90	1.20	1.50
B1	0.40	0.60	0.80
B2	0.60	0.85	1.05
c	0.40	0.50	0.60
c1	0.40	0.50	0.60
D	6.40	6.60	6.80
D1	4.80	5.20	5.50
E	6.70	7.00	7.30
E1	5.40	5.60	5.80
E2	1.30	1.50	1.70
e	----	2.30	----
F	7.00	8.30	9.60

1. All dimensions are in millimeters.
2. Dimensions do not include mold protrusions.

**Marking Information**

