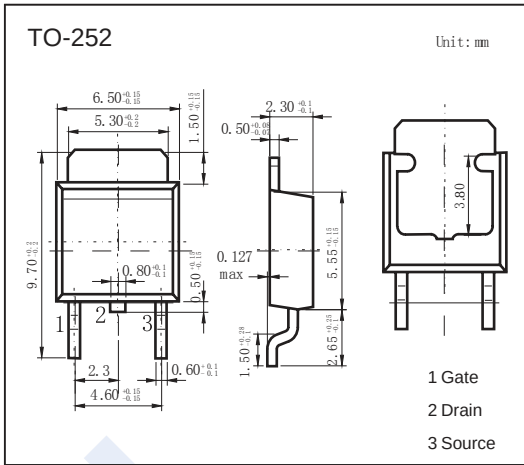
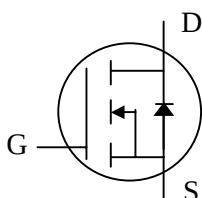


N-Channel MOSFET AP9974

■ Features

- $V_{DS} (V) = 60V$
- $I_D = 68 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 12m \Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 15m \Omega (V_{GS} = 4.5V)$
- Single Drive Requirement



■ Absolute Maximum Ratings $T_a = 25^{\circ}C$

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_c=25^{\circ}C$	I_D	68	A
	$T_c=100^{\circ}C$		43	
Pulsed Drain Current		I_{DM}	272	
Power Dissipation		P_D	104	W
Thermal Resistance.Junction- to-Ambient		R_{thJA}	62.5	$^{\circ}C/W$
Thermal Resistance.Junction- to-Case		R_{thJC}	1.2	
Junction Temperature		T_J	150	$^{\circ}C$
Storage Temperature Range		T_{stg}	-55 to 150	

N-Channel MOSFET

AP9974

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250 μA, V _{GS} =0V	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			10	μA
		V _{DS} =48V, V _{GS} =0V			250	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μA	1		3	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =45A			12	mΩ
		V _{GS} =4.5V, I _D =30A			15	
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =30A		55		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1MHz		2055	3300	pF
Output Capacitance	C _{oss}			260		
Reverse Transfer Capacitance	C _{rss}			200		
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =48V, I _D =30A		28	45	nC
Gate Source Charge	Q _{gs}			5		
Gate Drain Charge	Q _{gd}			19		
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =30V, I _D =30A, R _L =1 Ω, R _G =3.3 Ω		9		ns
Turn-On Rise Time	t _r			8		
Turn-Off DelayTime	t _{d(off)}			42		
Turn-Off Fall Time	t _f			20		
Body Diode Reverse Recovery Time	t _{rr}	I _F = 10A, V _{GS} =0, dI/dt= 100A/μs		35		nC
Body Diode Reverse Recovery Charge	Q _{rr}			43		
Diode Forward Voltage	V _{SD}	I _S =45A, V _{GS} =0V			1.3	V

N-Channel MOSFET

AP9974

■ Typical Characteristics

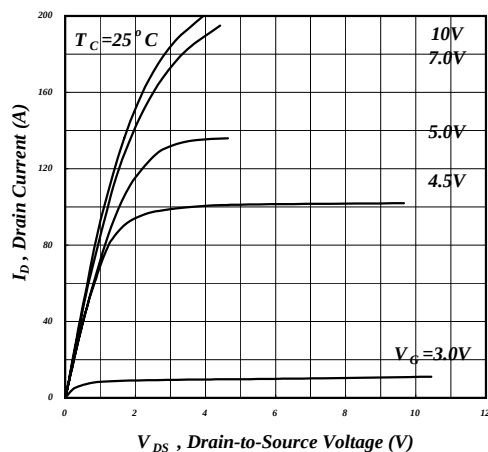


Fig 1. Typical Output Characteristics

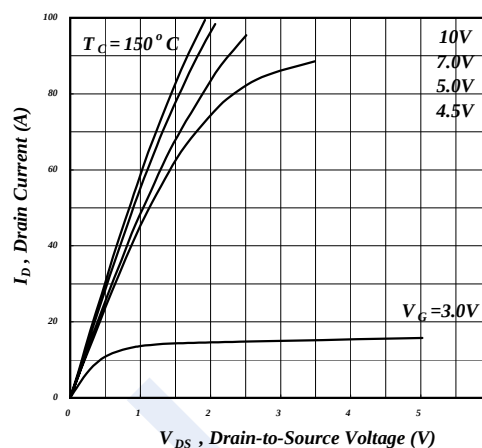


Fig 2. Typical Output Characteristics

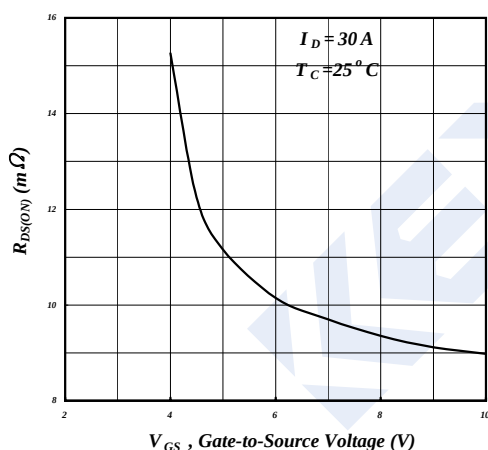


Fig 3. On-Resistance v.s. Gate Voltage

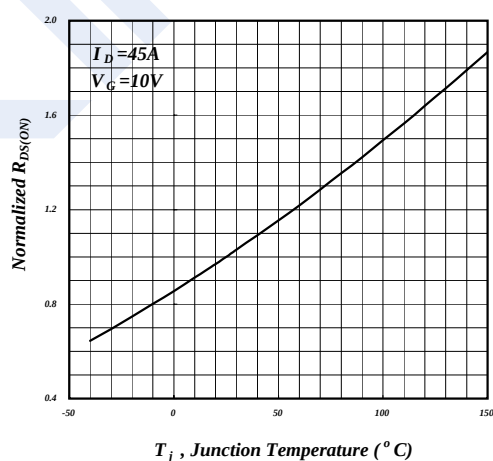


Fig 4. Normalized On-Resistance v.s. Junction Temperature

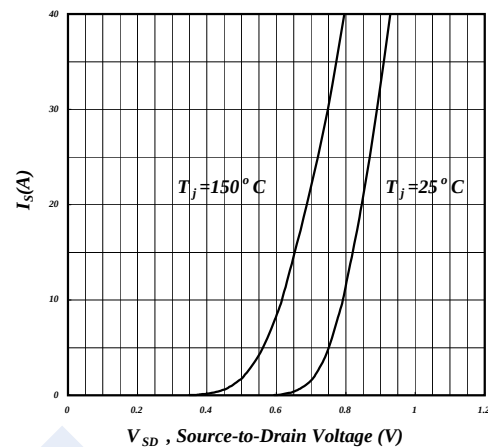


Fig 5. Forward Characteristic of Reverse Diode

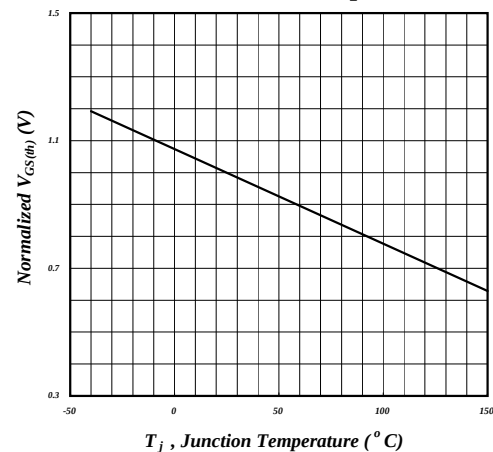


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

N-Channel MOSFET

AP9974

■ Typical Characteristics

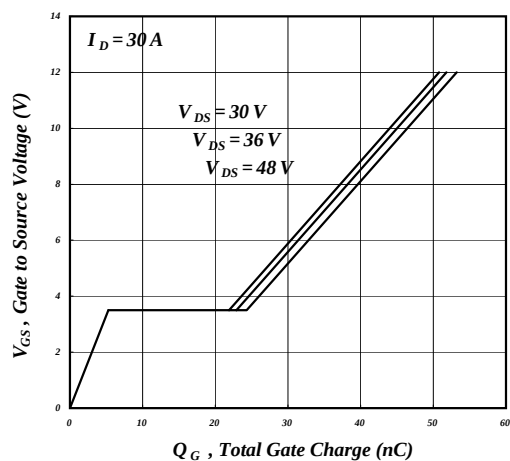


Fig 7. Gate Charge Characteristics

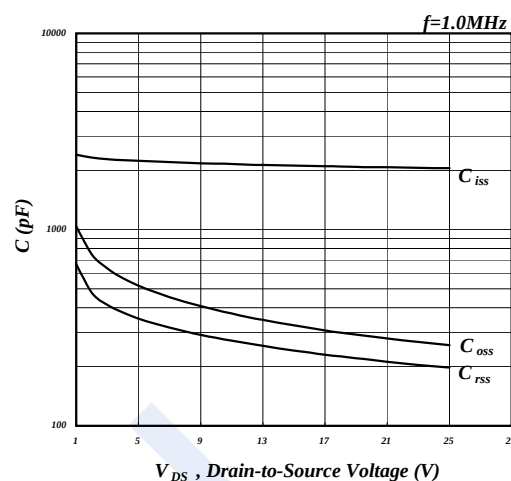


Fig 8. Typical Capacitance Characteristics

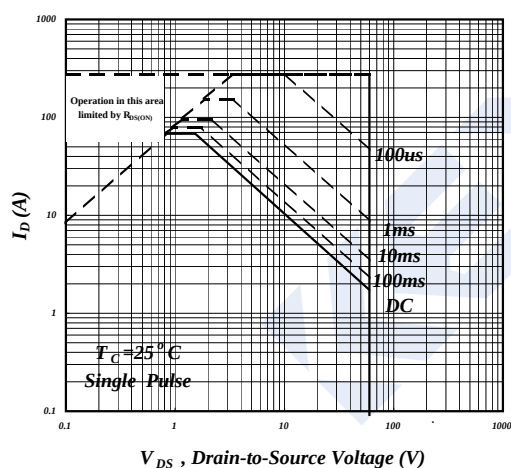


Fig 9. Maximum Safe Operating Area

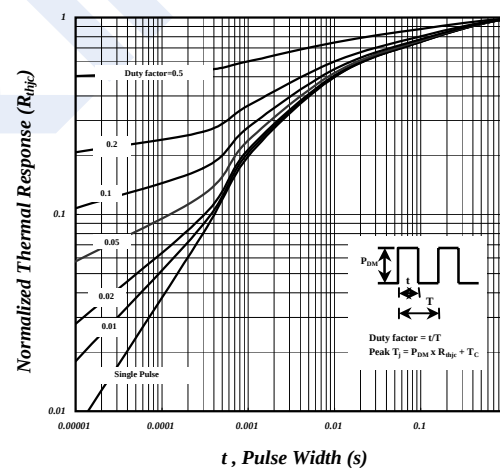


Fig 10. Effective Transient Thermal Impedance

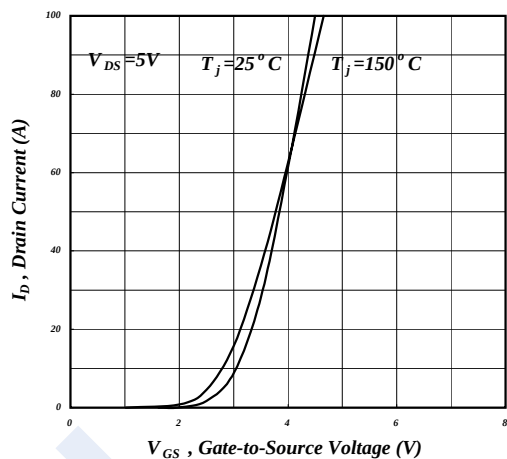


Fig 11. Transfer Characteristics

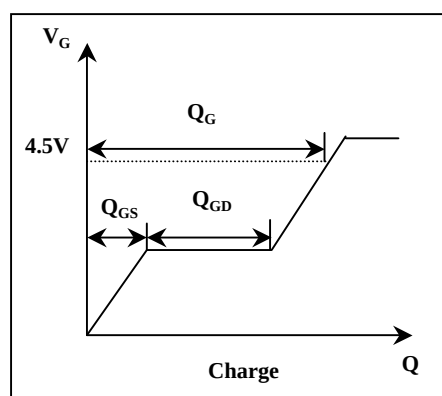


Fig 12. Gate Charge Waveform