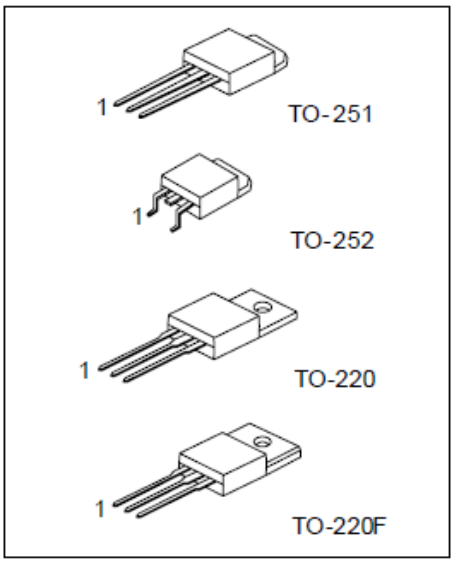
YAREN TECHNOLOGY

YR18N06

Power MOSFET

18Amps, 60 Volts N-CHANNEL MOSFET



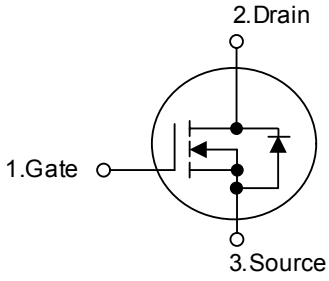
■ DESCRIPTION

The YR 18N06 is a low voltage MOSFET and is designed to have better characteristics, such as fast switching time, low gate charge, low on-state resistance and have a high rugged avalanche characteristics. This power MOSFET is usually used at high speed switching applications in power supplies, PWM motor controls, high efficient DC to DC converters and bridge circuits.

■ FEATURES

* $R_{DS(ON)}$ = 55m Ω@V_{GS} = 10 V
* Ultra low gate charge (typical 15 nC)
* Low reverse transfer Capacitance (C_{RSS} = typical 40 pF)
* Fast switching capability
* Avalanche energy Specified
* Improved dv/dt capability, high ruggedness

■ SYMBOL



ABSOLUTE MAXIMUM RATINGS (T_C = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C	I_D	18	A
	T_C = 70 °C		13	
Pulsed Drain Current[1]		I_{DM}	80	
Power Dissipation	T_C = 25 °C	P_D	50	W
	T_C = 70 °C		32	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C
Lead Temperature ($^1/_{16}$" from case for 10 sec.)		T_L	275	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		2.5	°C / W
Junction-to-Ambient	$R_{\theta JA}$		55	°C / W

[1]Pulse width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS (T_C = 25 °C, Unless Otherwise Noted)

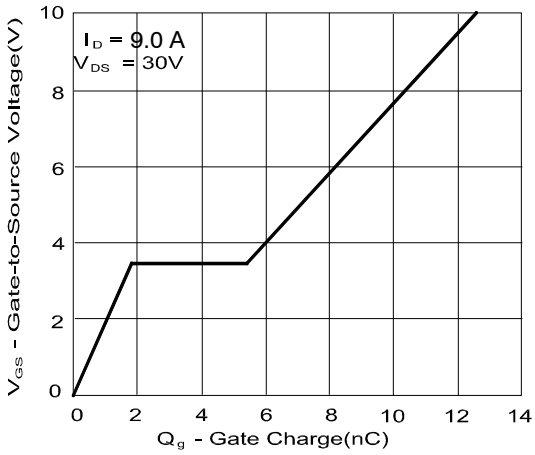
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±250	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48V, V_{GS} = 0V			1	μA
		V_{DS} = 40V, V_{GS} = 0V, T_J = 55 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	22			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 9.0 A		59	75	mΩ
		V_{GS} = 10V, I_D = 9.0 A		42	55	

Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 9.0 A		14		S

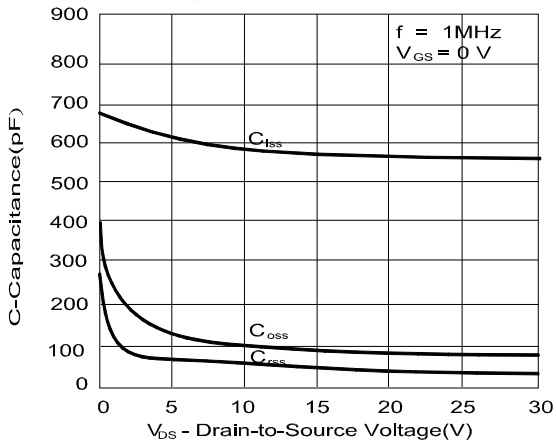
DYNAMIC							
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz			587		pF
Output Capacitance	C_{oss}				80		
Reverse Transfer Capacitance	C_{rss}				46		
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, I_D = 9.0 A			12.5		nC
Gate-Source Charge[2]	Q_{gs}				1.8		
Gate-Drain Charge[2]	Q_{gd}				3.7		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 30V, $I_D \cong$ 1A, V_{GS} = 10V, R_{GEN} = 6Ω			11		nS
Rise Time[2]	t_r				8		
Turn-Off Delay Time[2]	$t_{d(off)}$				19		
Fall Time[2]	t_f				6		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)							
Continuous Current	I_S					18	A
Forward Voltage[1]	V_{SD}	I_F = 1A, V_{GS} = 0V				1	V

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.

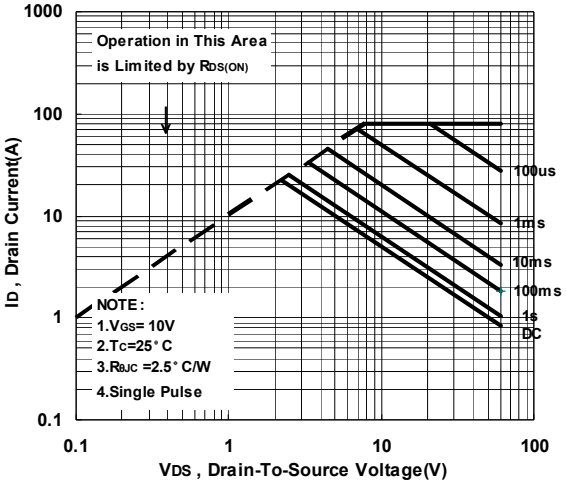
Gate Charge Characteristics



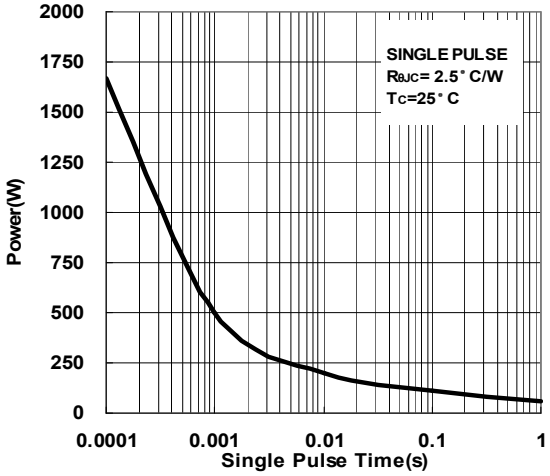
Capacitance Characteristics



Safe Operating Area



Single Pulse Maximum Power Disspation



Transient Thermal Response Curve