

-18Amps, -60 Volts P-CHANNEL MOSFET

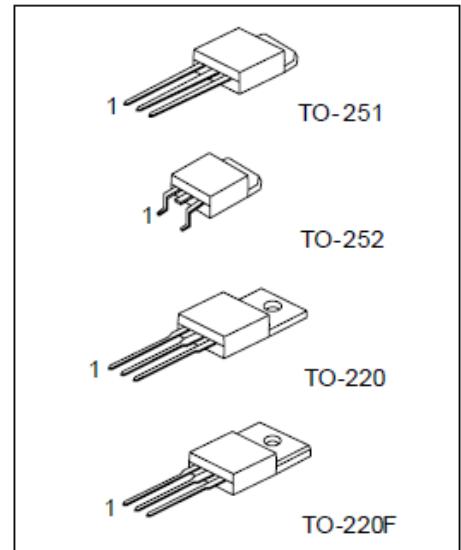
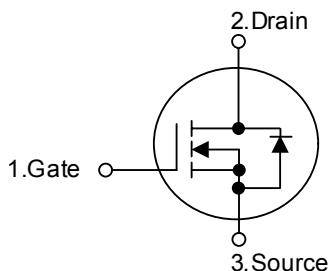
■ DESCRIPTION

The YR 18P06 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

- * $R_{DS(ON)} = 90m\ \Omega @ V_{GS} = -10\ V$
- * Ultra low gate charge (typical 15 nC)
- * Low reverse transfer Capacitance ($C_{RSS} = \text{typical } 40\ pF$)
- * Fast switching capability
- * Avalanche energy Specified
- * Improved dv/dt capability, high ruggedness

■ SYMBOL



■ ABSOLUTE MAXIMUM RATING ($T_C = 25^\circ\text{C}$ unless otherwise specified)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS		UNITS
Drain-Source Voltage		V_{DS}	-60		V
Gate-Source Voltage		V_{GS}	± 20		V
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	-18		A
	$T_C = 70^\circ\text{C}$		-13		
Pulsed Drain Current ¹		I_{DM}	-74		
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	60		W
	$T_C = 70^\circ\text{C}$		38		
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		$^\circ\text{C}$
Lead Temperature ($1/16''$ from case for 10 sec.)		T_L	275		

■ THERMAL DATA

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		75	$^\circ\text{C} / \text{W}$

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

■ ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu\text{A}$	-60			V
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-1	-2	-3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 250	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -48V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -44V, V_{GS} = 0V, T_J = 125^\circ\text{C}$			-10	
On-State Drain Current ¹	$I_{D(\text{ON})}$	$V_{DS} = -5V, V_{GS} = -10V$	-32			A

Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = -10\text{ V}$, $I_D = -9.0\text{ A}$		70	90	$\text{m}\Omega$
		$V_{GS} = -5.0\text{ V}$, $I_D = -9.0\text{ A}$		100	130	
Forward Transconductance ¹	g_{fs}	$V_{DS} = -10\text{ V}$, $I_D = -9.0\text{ A}$		11		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = -30\text{V}$, $f = 1\text{MHz}$		760		pF
Output Capacitance	C_{oss}			90		
Reverse Transfer Capacitance	C_{rss}			40		
Total Gate Charge ²	Q_g	$V_{DS} = 0.5V_{(BR)DSS}$, $V_{GS} = -10\text{V}$, $I_D = -9.0\text{ A}$		15		nC
Gate-Source Charge ²	Q_{gs}			2.5		
Gate-Drain Charge ²	Q_{gd}			3.0		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DS} = -20\text{V}$ $I_D \approx -1\text{A}$, $V_{GS} = -10\text{V}$, $R_{GS} = 6\Omega$		7	14	nS
Rise Time ²	t_r			10	20	
Turn-Off Delay Time ²	$t_{d(off)}$			19	34	
Fall Time ²	t_f			12	22	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_c = 25^\circ\text{C}$)						
Continuous Current	I_S				-1.3	A
Pulsed Current ³	I_{SM}				-2.6	
Forward Voltage ¹	V_{SD}	$I_F = I_S$, $V_{GS} = 0\text{V}$			-1	V
Reverse Recovery Time	t_{rr}	$I_F = -9\text{ A}$, $dI_F/dt = 100\text{A}/\mu\text{s}$		15.5		nS
Reverse Recovery Charge	Q_{rr}			7.9		nC

¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

TYPICAL PERFORMANCE CHARACTERISTICS

