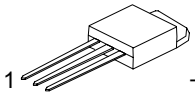
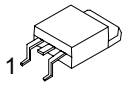
YAREN TECHNOLOGY

YR3610
Power MOSFET

28Amps, 100Volts
N-CHANNEL POWER MOSFET



TO-251



TO-252

*Pb-free plating product number: YR3610

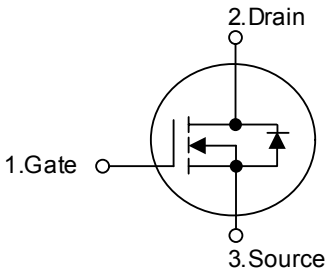
■ DESCRIPTION

The YR 3610 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 excellent avalanche characteristics. This power MOSFET is usually used at automotive applications in power supplies, high efficient DC to DC converters and battery operated products.

■ FEATURES

* $R_{DS(ON)}$ = 50mΩ@V_{GS} = 10 V
* Ultra low gate charge (typical 40 nC)
* Low reverse transfer Capacitance (C_{RSS} = typical 140 pF)
* Fast switching capability
* 100% avalanche energy specified
* Improved dv/dt capability

■ SYMBOL



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25 °C	I_D	28	A
	T_C = 100 °C		18	
Pulsed Drain Current[2]		I_{DM}	90	
Avalanche Current		I_{AS}	38	
Avalanche Energy	L = 0.1mH	E_{AS}	73	mJ
Power Dissipation	T_C = 25 °C	P_D	56	W
	T_C = 100 °C		22	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		62.5	°C / W
Junction-to-Case	$R_{\theta JC}$		2.2	

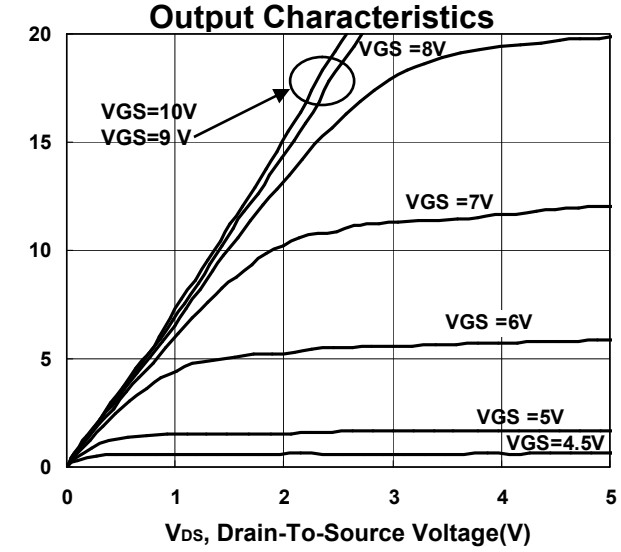
[1]Pulse width limited by maximum junction temperature.
[2]Limited by package.

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

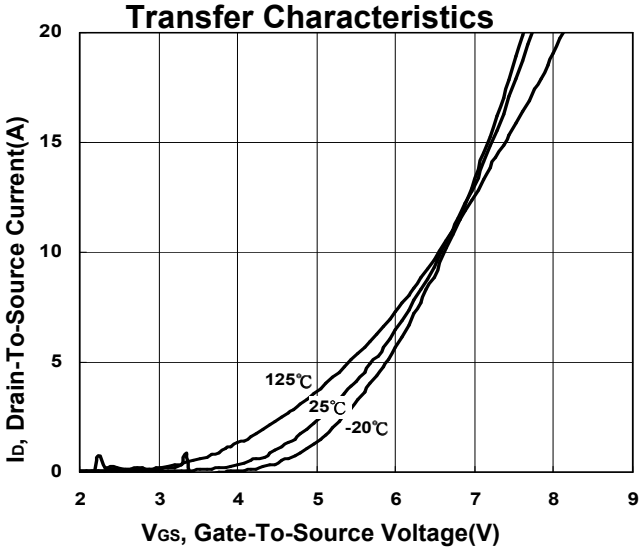
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±250	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V			1	μA
		V_{DS} = 80V, V_{GS} = 0V, T_J = 125 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 15A		38	50	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 15A		12		S
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 10V, V_{GS} = 10V,	90			A
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		1700		pF
Output Capacitance	C_{oss}			207		
Reverse Transfer Capacitance	C_{rss}			140		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		2		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 50V, V_{GS} = 10V, I_D = 15A		40		nC
Gate-Source Charge[2]	Q_{gs}			11		
Gate-Drain Charge[2]	Q_{gd}			20		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 50V, I_D ≅ 15A, V_{GS} = 10V, R_{GEN} =6Ω		7		nS
Rise Time[2]	t_r			28		
Turn-Off Delay Time[2]	$t_{d(off)}$			68		
Fall Time[2]	t_f			60		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				28	A
Forward Voltage[1]	V_{SD}	I_F = 15A, V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 15A, dI_F/dt = 100A / μS		62		nS
Reverse Recovery Charge	Qrr			145		nC

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

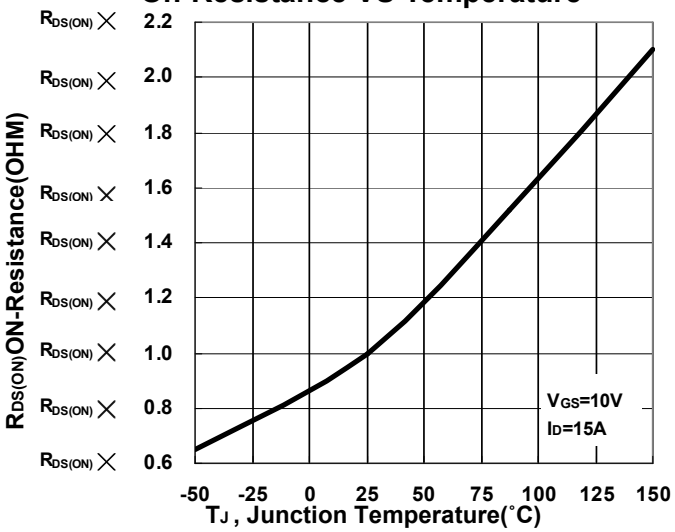
Output Characteristics



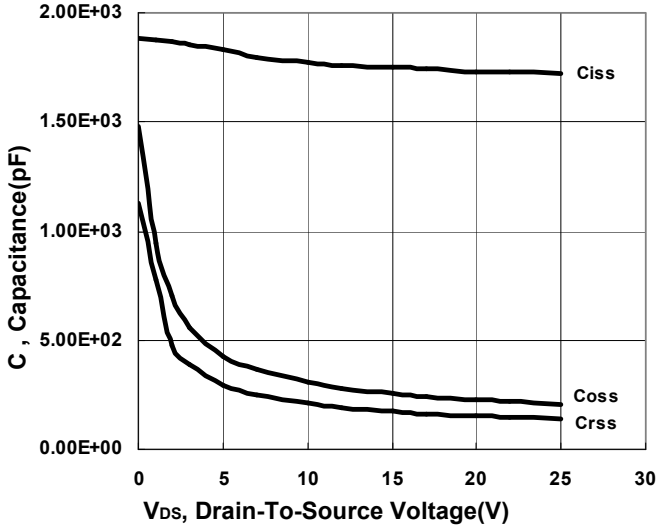
Transfer Characteristics



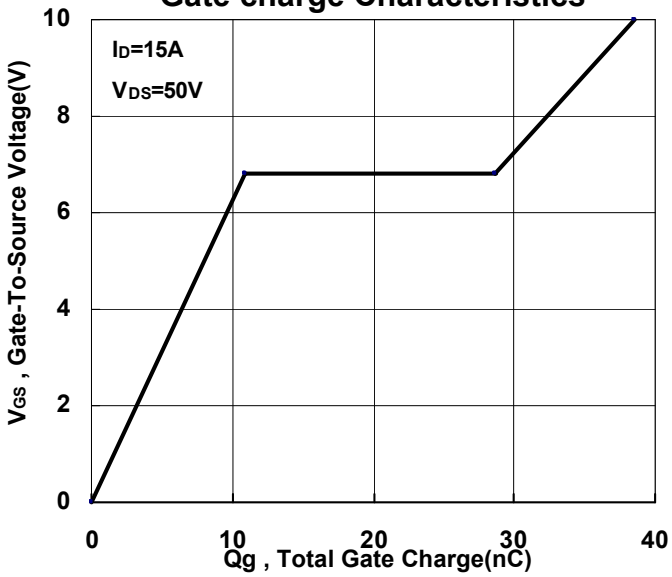
On-Resistance VS Temperature



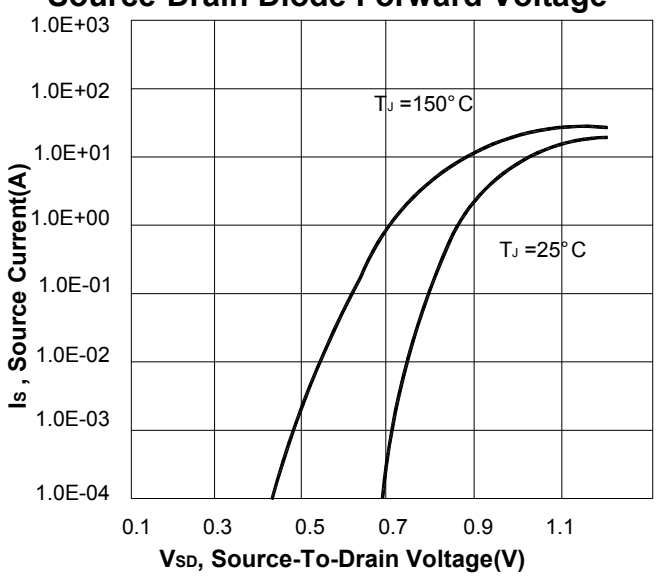
Capacitance Characteristic



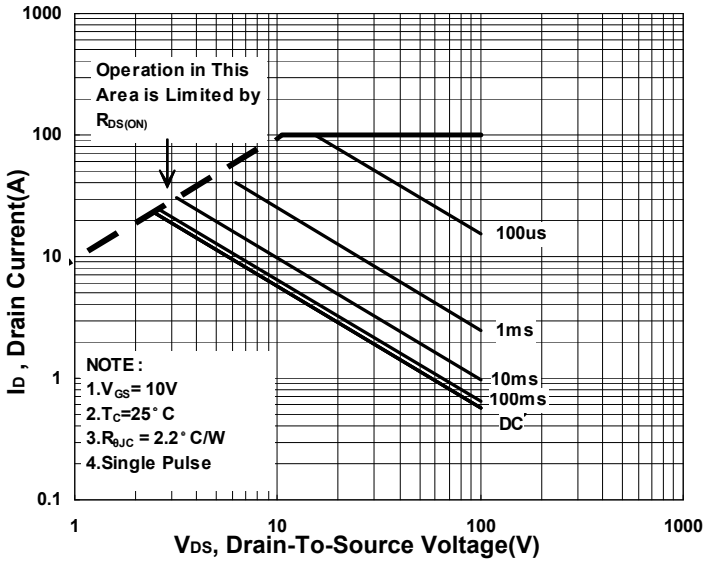
Gate charge Characteristics



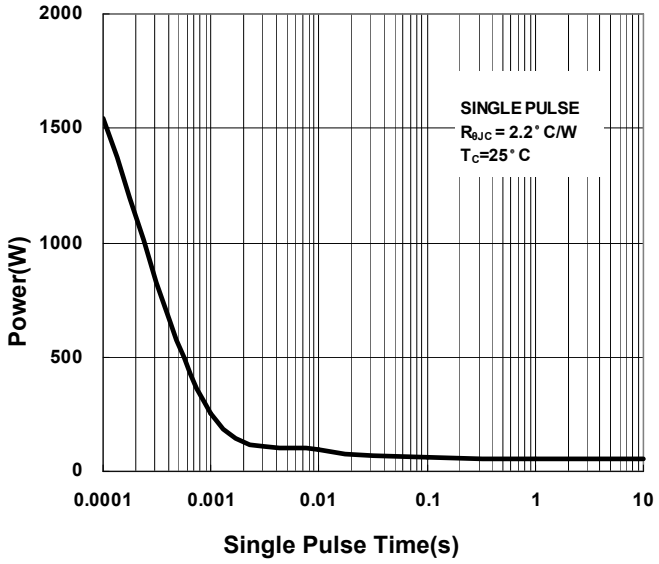
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve