HMR65P06

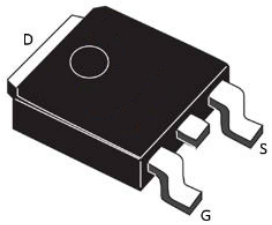
Silicon P-Channel Power MOSFET

V_{DSS}	-60	V
I_D	-65	A
P_D	130	W
$R_{DS(ON)}$	13	mΩ

General Description :

The HMR65P06 uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications. The package form is TO-252, which accords with the RoHS standard.

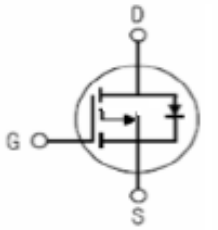
TO-252



Features :

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Inner Equivalent Principium Chart



Applications :

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Absolute (Tc=25℃ unless otherwise specified) :

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-60	V
I_D	Continuous Drain Current	-65	A
	Continuous Drain Current T_C=100 °C	-45	A
I_{DM} [a1]	Pulsed Drain Current	-260	A
V_{GS}	Gate-to-Source Voltage	±20	V
dv/dt [a3]	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	130	W
T_J , T_{stg}	Operating Junction and Storage Temperature Range	175 , –55 to 175	℃
T_L	Maximum Temperature for Soldering	300	℃

Electrical Characteristics (Tc=25℃ unless otherwise specified) :

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V,I_D=-250μA	-60	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	I_D=-250uA,Reference25℃	--	0.02	--	V/℃
I_{DSS}	Drain to Source Leakage Current	V_{DS}=-60,V_{GS}= 0V,T_a=25℃	--	--	-1	μA
		V_{DS}=-48V,V_{GS}= 0V,T_a=125℃	--	--	-250	
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=+20V	--	--	1	μA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=-20V	--	--	-1	μA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=-10V,I_D=-20.0A	--	13	23	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	-1.0	--	-3.0	V
Pulse width tp≤380μs,δ≤2%						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	V_{DS}=-10V,I_D=-20A	--	25	--	S
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=-25V f=1.0MHz	--	5700	--	pF
C_{oss}	Output Capacitance		--	470	--	
C_{rss}	Reverse Transfer Capacitance		--	220	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	R_L=-1.5Ω,V_{DD}=-30V V_{GS}=-10V,R_G=3Ω	--	20	--	ns
t_r	Rise Time		--	20	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	50	--	
t_f	Fall Time		--	30	--	
Q_g	Total Gate Charge	I_D=-30.0A,V_{DD}=-20V V_{GS}=-10V	--	70	--	nC
Q_{gs}	Gate to Source Charge		--	16	--	
Q_{gd}	Gate to Drain (“Miller”)Charge		--	17	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	-65	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	-120	A
V_{SD}	Diode Forward Voltage	I_S=-30A,V_{GS}=0V	--	--	1.5	V
t_{rr}	Reverse Recovery Time	I_S=-20A,T_j = 25°C	--	50	--	ns
Q_{rr}	Reverse Recovery Charge	dI_F/dt=100A/us,V_{GS}=0V	--	70	--	nC
Pulse width tp≤380μs,δ≤2%						

Symbol	Parameter	Typ.	Units
$R_{\theta JA}$	Junction-to-Ambient	0.97	℃/W

[a1] : Repetitive rating; pulse width limited by maximum junction temperature

[a3] : I_{SD} =-30A,di/dt ≤100A/us,V_{DD}≤BV_{DS}, Start T_J=25℃

Typical Electrical and Thermal Characteristics

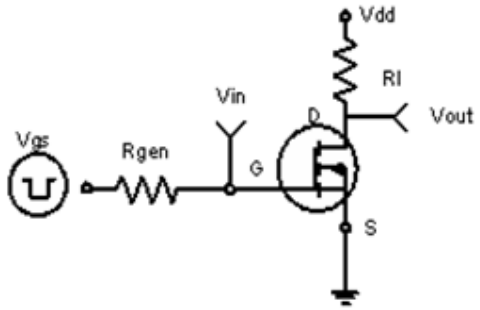


Figure 1:Switching Test Circuit

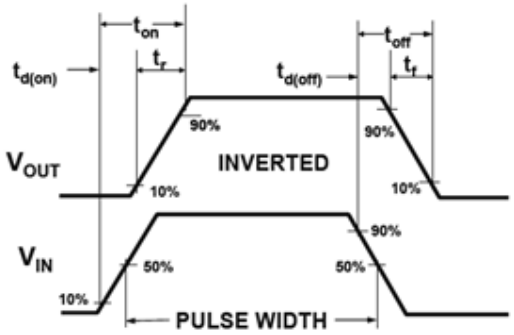


Figure 2:Switching Waveforms

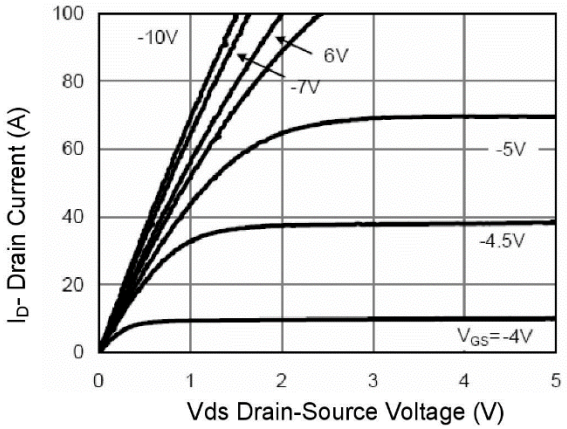


Figure 1 Output Characteristics

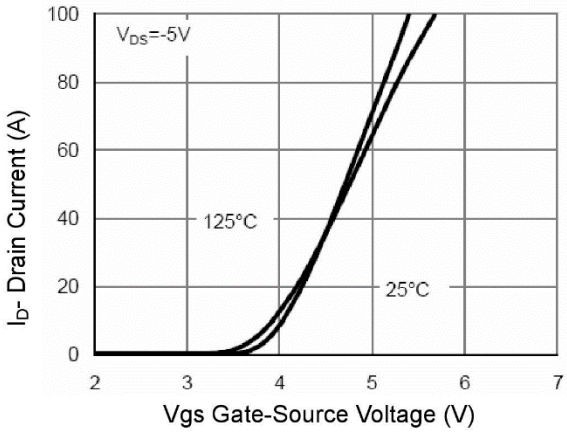


Figure 2 Transfer Characteristics

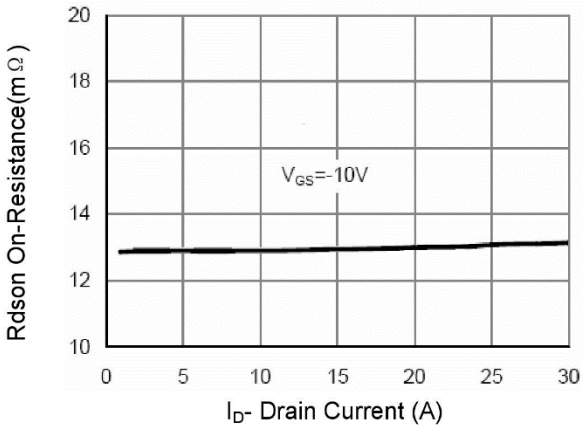


Figure 3 Rdson- Drain Current

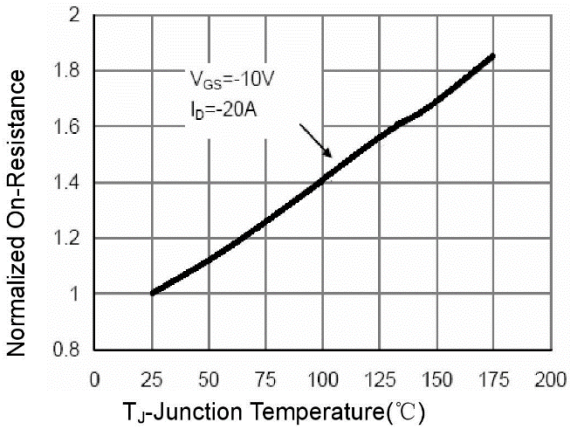


Figure 4 Rdson-Junction Temperature

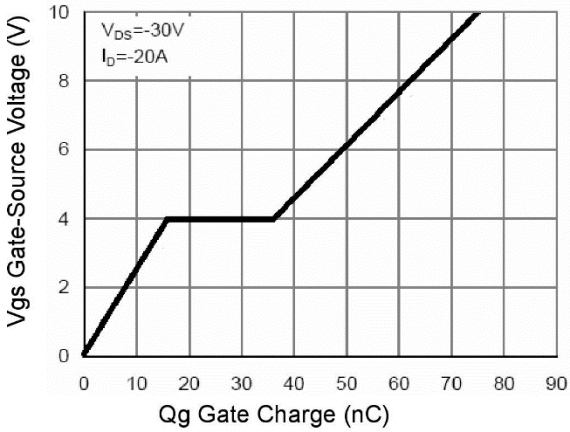


Figure 5 Gate Charge

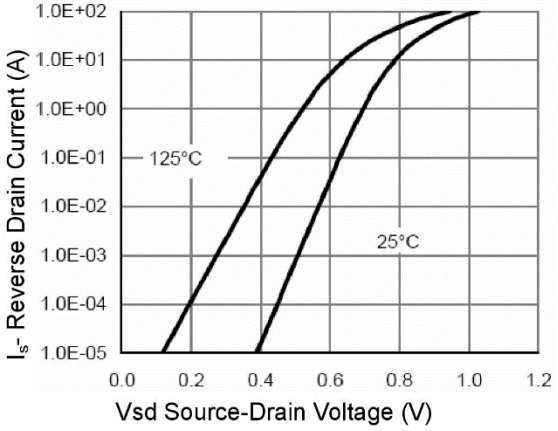


Figure 6 Source- Drain Diode Forward

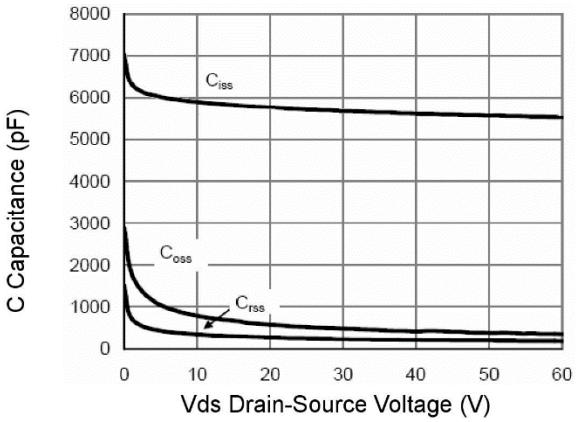


Figure 7 Capacitance vs Vds

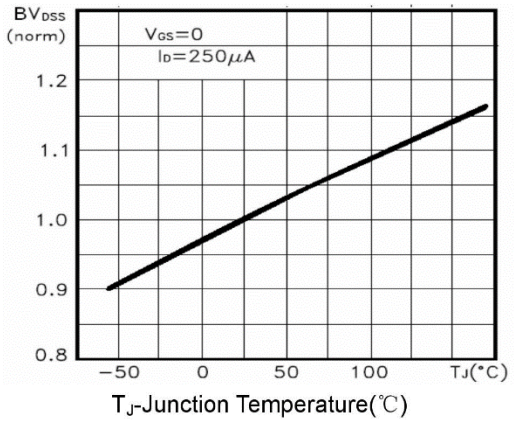


Figure 9 BV_{DSS} vs Junction Temperature

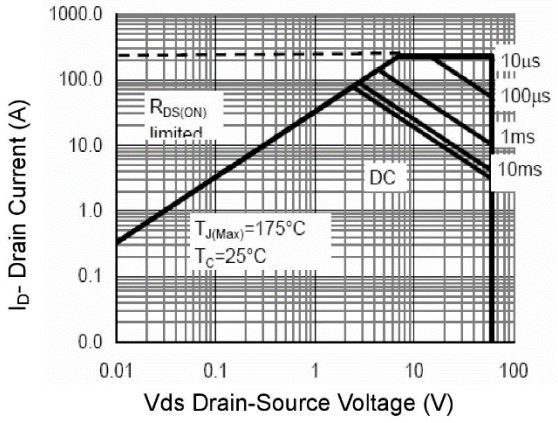


Figure 8 Safe Operation Area

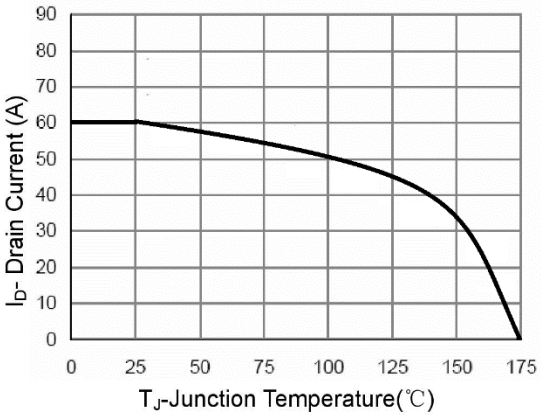


Figure 10 ID Current Derating vs Junction Temperature

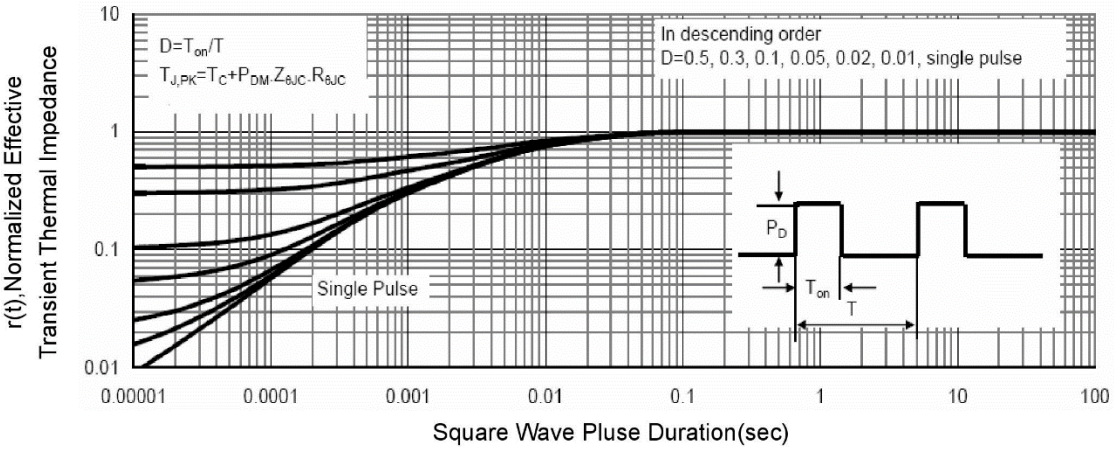


Figure 11 Normalized Maximum Transient Thermal Impedance