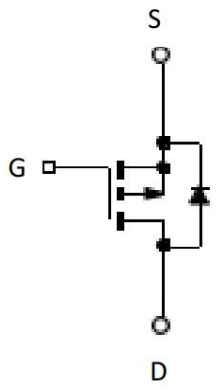
迈诺斯科技

IRFP9240

Description

IRFP9240, the silicon P-channel Enhanced MOSFETs, is obtained by advanced MOSFET technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor is suitable device for SMPS, high speed switching and general purpose applications.



TO-247

KEY CHARACTERISTICS

Parameter	Value	Unit
V_{DS}	-200	V
I_D	-11	A
$R_{DS(ON).Typ}$	0.34	Ω

FEATURES

① Fast Switching
② Low Crss
③ 100% avalanche tested
④ Improved dv/dt capability
⑤ RoHS product

APPLICATIONS

①High frequency switching mode power supply

ORDERING INFORMATION

Ordering Codes	Package	Product Code	Packing
IRFP9240	TO-247	IRFP9240	Tube

ABSOLUTE RATINGS

at TC = 25°C, unless otherwise specified

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-200	V
I_D	Continuous Drain Current	-11	A
I_{DM}	Pulsed Drain Current(Note1)	-44	A
T_J，T_{stg}	Operating Junction and Storage Temperature Range	–55-+150	℃
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy(Note2)	165	mJ
P_D	Linear Derating Factor	0.6	W/℃

	Power Dissipation (TC = 25ºC)	78	mJ

Thermal characteristics

Symbol	Parameter	Value	Unit
R_{thJC}	Junction-to-Case	12	K/W
R_{thJA}	Junction-to-Ambient	48	K/W

Electrical Characteristics

at TC = 25°C, unless otherwise specified

OFF Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	-200	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =-200V, VGS= 0V,T_j =25℃	--	--	5	μ A
$I_{GSS(R)}$	Gate-Source Leakage	V_{GS} =-30V	--	--	-120	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On- Resistance	VGS=10V, ID=-6.6A)	--	0.34	0.42	Ω
$V_{GS(TH)}$	Gate Threshold Voltage	VDS = VGS, ID = 250μA(Note4)	-2	--	-4	V

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = -25V, f = 1.0MHz	--	1200	--	PF
C_{oss}	Output Capacitance		--	370	--	
C_{rss}	Reverse Transfer Capacitance		--	81	--	

Switching Characteristics						
Symbol	**Parameter**	**Test Conditions**	**Values**			**Units**
			Min.	**Typ.**	**Max.**	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = -160V, I_D =-13.5A, R_G = 25 Ω	--	28	56	ns
t_r	Rise Time		--	74	148	
$t_{d(OFF)}$	Turn-Off Delay Time		--	260	520	
t_f	Fall Time		--	120	240	
Q_g	Total Gate Charge	V_{DD} =-100V, I_D = -13.5A, V_{GS} = -10V	--	52	68	nC
Q_{gs}	Gate to Source Charge		--	9	--	
Q_{gd}	Gate to Drain (“Miller”)Charge		--	25	--	

Source-Drain Diode Characteristics						
Symbol	**Parameter**	**Test Conditions**	**Values**			**Units**
			Min.	**Typ.**	**Max.**	
I_S	Continuous Source Current (Body Diode)	T_C=25 °C	--	--	-11	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	-44	A
V_{SD}	Diode Forward Voltage	I_S=-11A, V_{GS}=0V(Note4)	--	--	5	V
T_{rr}	Reverse Recovery Time	I_S=-11A, T_j = 25°C $d_{IF/dt}$=100A/us,	--	250	300	ns
Q_{rr}	Reverse Recovery Charge		--	2.9	3.6	nC

Note1: Pulse width limited by maximum junction temperature

Note2: L=10mH, VDs=100V, Start TJ=25℃

Note3: ISD =-11A,di/dt ≤100A/us,VDD≤BVDS, Start TJ=25℃

Note4: Pulse width tp≤300μs, δ≤2%

Characteristics Curves

Figure 1 Safe Operating Area

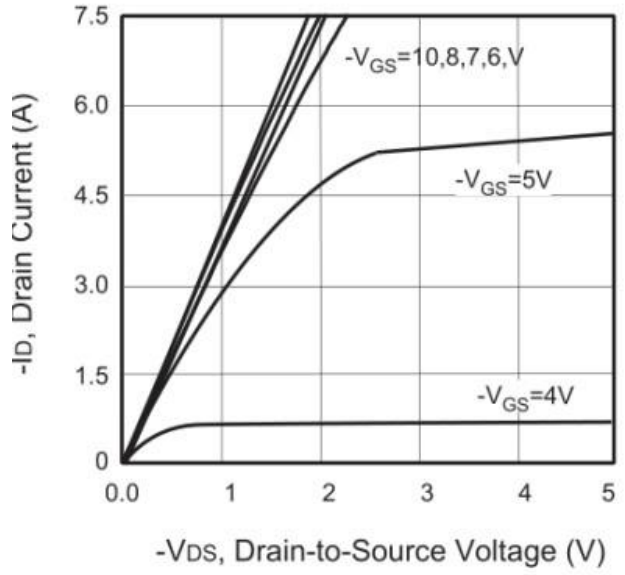


Figure 2 Power Dissipation

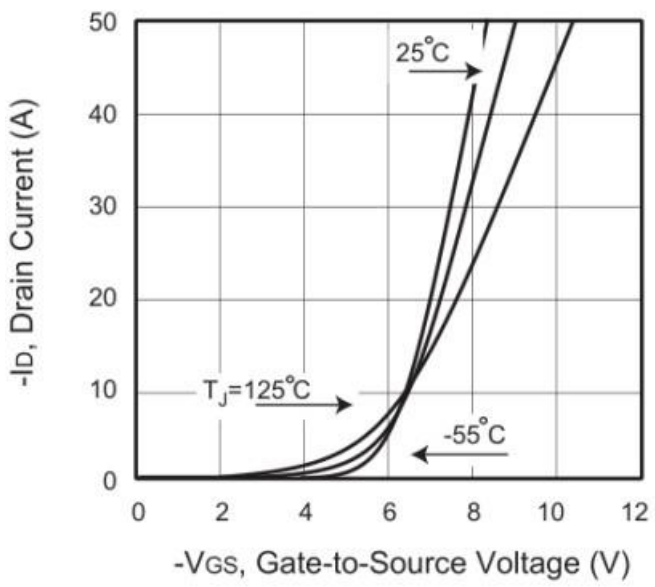


Figure 3a Max Thermal Impendance

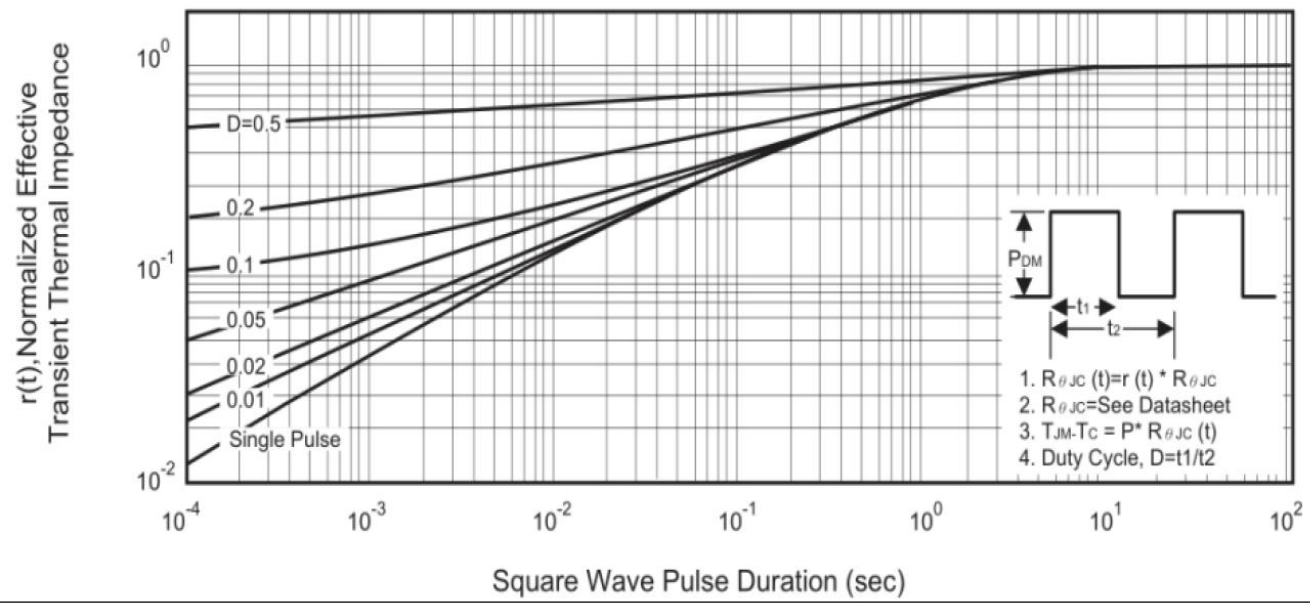


Figure 4 Typical Output Characteristics	Figure 5 Typical Transfer Characteristics

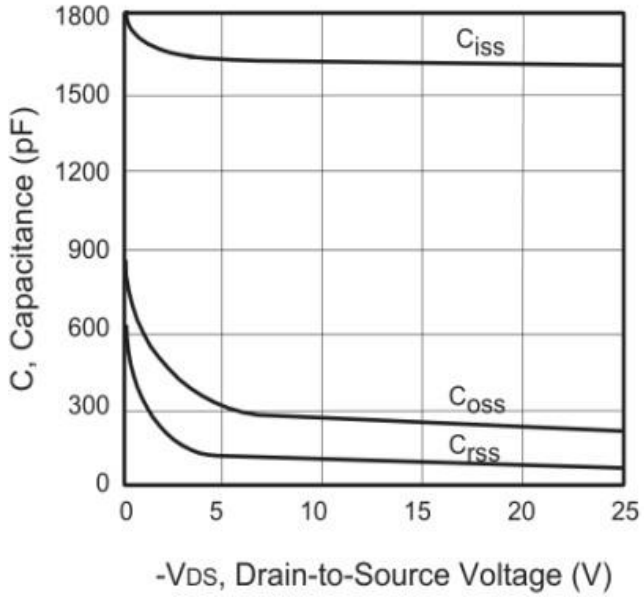
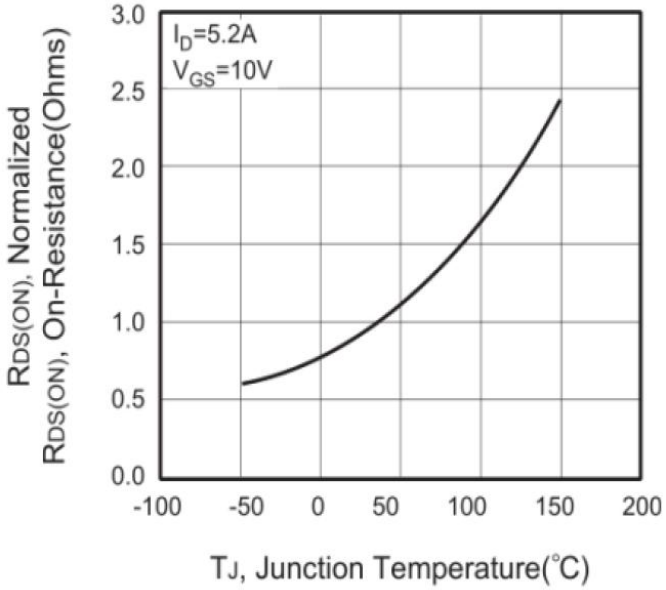

	

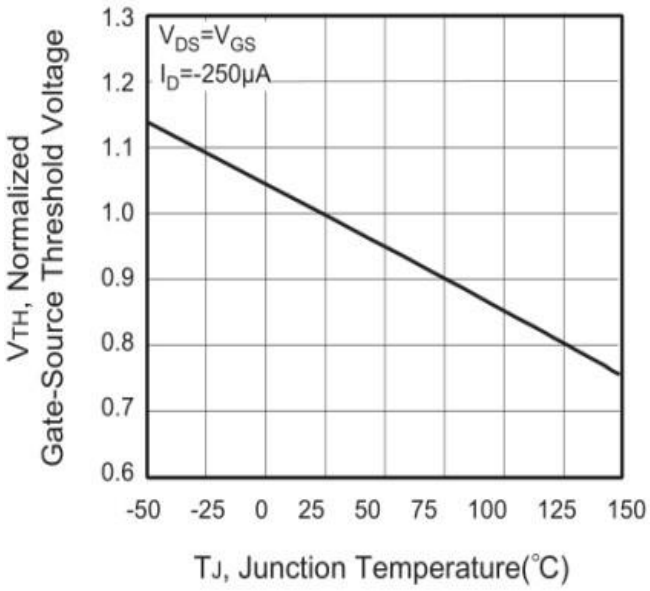
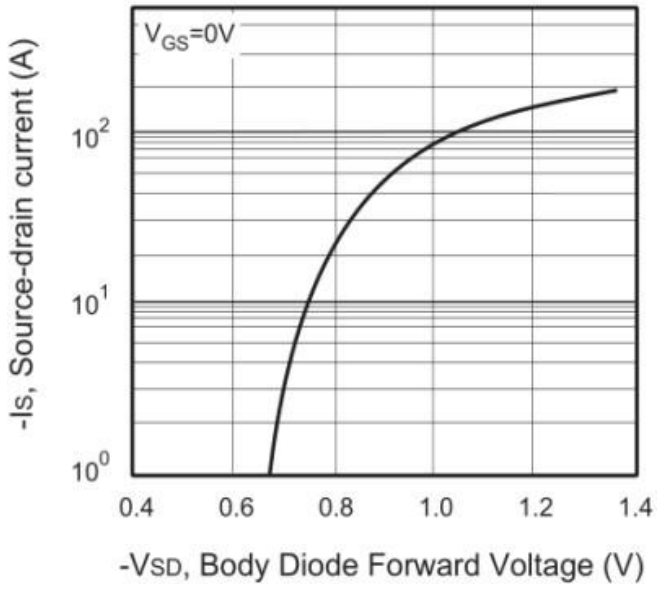
Figure 6 Typical Drain to Source ON Resistance vs Drain Current	**Figure 7 Typical Drian to Source on Resistance vs Junction Temperature**
	

Figure 8 Typical Theshold Voltage vs Junction Temperature	Figure 9 Typical Breakdown Voltage vs Junction Temperature

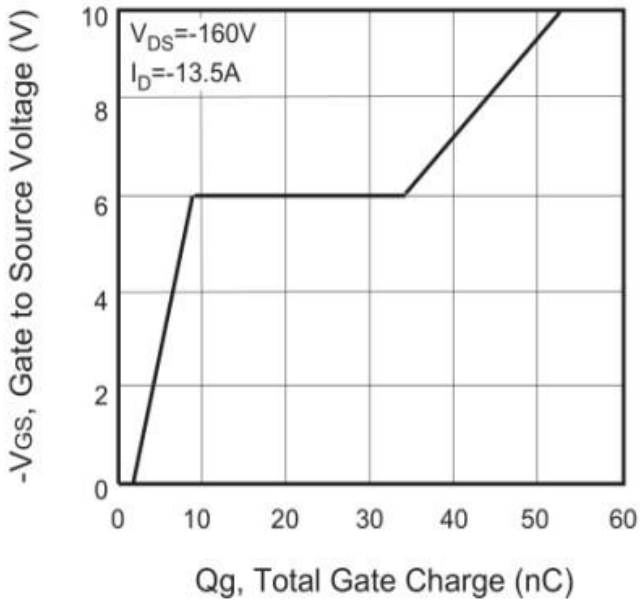
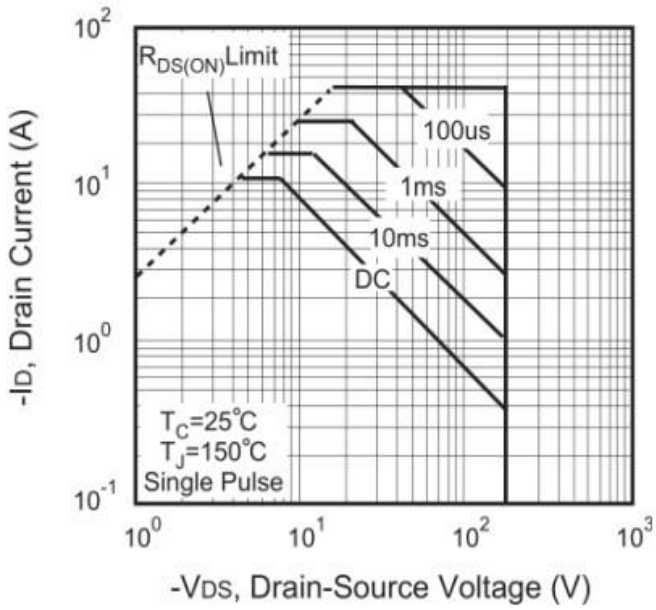
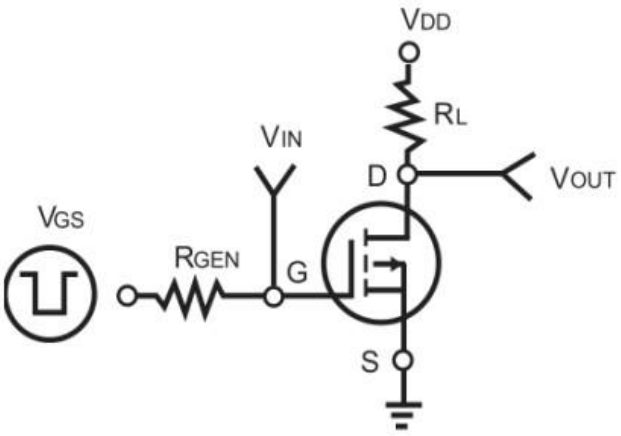
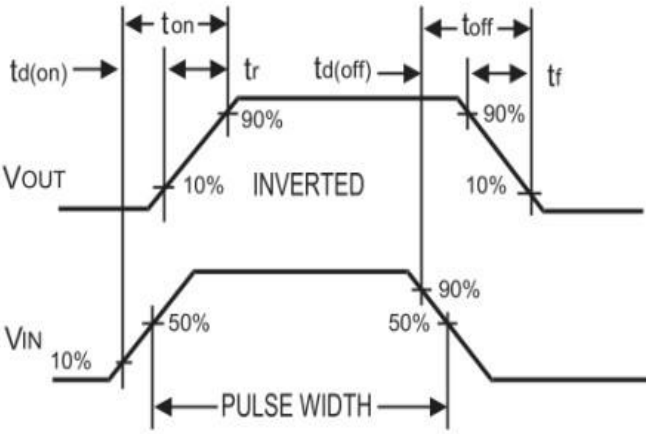
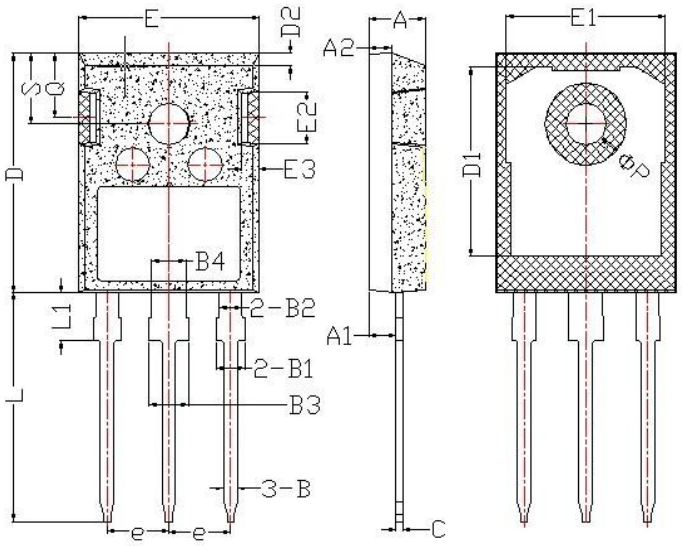

	

Figure 10 Typical Theshold Voltage vs Junction Temperature	**Figure 11 Typical Breakdown Voltage vs Junction Temperature**
	



Items	Values(mm)	
	MIN	MAX
A	4.6	5.2
A1	2,2	2.6
B	0.9	1.4
B1	1.75	2.35
B2	1.75	2.15
B3	2.8	3.35
B4	2.8	3.15
C	0.5	0.7
D	20.60	21.30
D1	16	18
E	15.5	16.10
E1	13	14.7
E2	3.80	5.3
E3	0.8	2.60
e	5.2	5.7
L	19	20.5
L1	3.9	4.6
ΦP	2.5	3.70
Q	5.2	6.00
S	5.8	6.6

TO-247 Package

NOTE:

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shenzhen Minos reserves the right to make changes in this specification sheet and is subject to change withoutprior notice.

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