

N and P Channel $\pm 40V$ MOSFET

General Description

The JY2504NPM is the N and P Channel logic enhancement mode power field transistors Which can provide excellent $R_{DS(ON)}$ and low gate charge. The complementary MOSFETs may be used in H-bridge, Inverters and other applications.

FEATURES

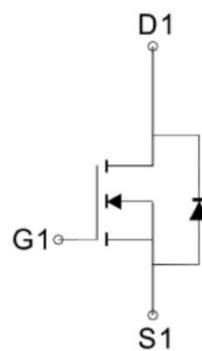
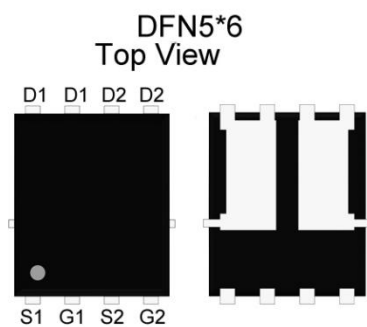
Device	$V_{BR(DSS)}$	$R_{DS(ON)}$ $T_J=25^\circ C$	Package	$I_{D\ MAX}$ $T_J=25^\circ C$
N-Channel	40V	$=12m\Omega @ V_{GS}=10V$	DFN5*6	$I_D=30A @ V_{GS}=10V$
		$=15m\Omega @ V_{GS}=4.5V$		
P-Channel	-40V	$=28m\Omega @ V_{GS}=-10V$		$I_D=-25A @ V_{GS}=10V$
		$=40m\Omega @ V_{GS}=-4.5V$		

- Low Input Capacitance
- Fast Switching Speed

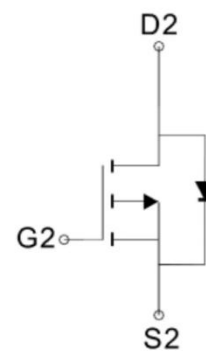
APPLICATIONS

- Power Management
- DC/DC Converter
- DC Motor Control
- LCD TV & Monitor Display Inverter
- CCFL inverter

PIN DESCRIPTION



N-Channel MOSFET



P-Channel MOSFET

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Absolute Maximum Ratings(Ta=25°C Unless Otherwise Noted)

Parameter		Symbol	N Channel	P Channel	Unit
Drain Source Voltage		V _{DSS}	40	-40	V
Gate Source Voltage		V _{DSS}	± 20	± 20	
Continuous Drain Current	Ta=25 °C	I _D	30	-25	A
	Ta=100 °C		20	-17	
Pulsed Drain Current		I _{DM}	60	-50	
Maximum Power Dissipation	Ta=25 °C	P _D	36		W
	Ta=70 °C		25		
Junction and Storage Temperature Range		T _J T _{STG}	-55 to 150		°C
Thermal Resistance Junction to Ambient		R _{θJA}	32.5		°C/W
Thermal Resistance Junction to Case		R _{θJC}	3.47		°C/W

Electrical Characteristics(Ta=25°C Unless Otherwise Noted)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static							
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250uA	N-Ch	1.0		3.0	V
		V _{DS} =V _{GS} ,I _D =-250uA	P-Ch	-1.0		-3.0	
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V	N-Ch			±100	nA
			P-Ch			±100	
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =32V, V _{GS} =0V	N-Ch			1	uA
		V _{DS} =-32V, V _{GS} =0V	P-Ch			-1	
I _{D(ON)}	On-State Drain Current	V _{DS} =5V, V _{GS} =10V	N-Ch	60			A
		V _{DS} =-5V, V _{GS} =-10V	P-Ch	-50			
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V,I _D =15A	N-Ch		12	15	mΩ
		V _{GS} =-10V,I _D =-10A	P-Ch		28	31	
		V _{GS} =4.5V,I _D =7.0A	N-Ch		15	20	
		V _{GS} =-4.5V,I _D =-5.0A	P-Ch		40	45	
V _{SD}	Diode Forward Voltage	I _S =15A,V _{GS} =0V	N-Ch			1.1	V
		I _S =-10A,V _{GS} =0V	P-Ch			-1.1	

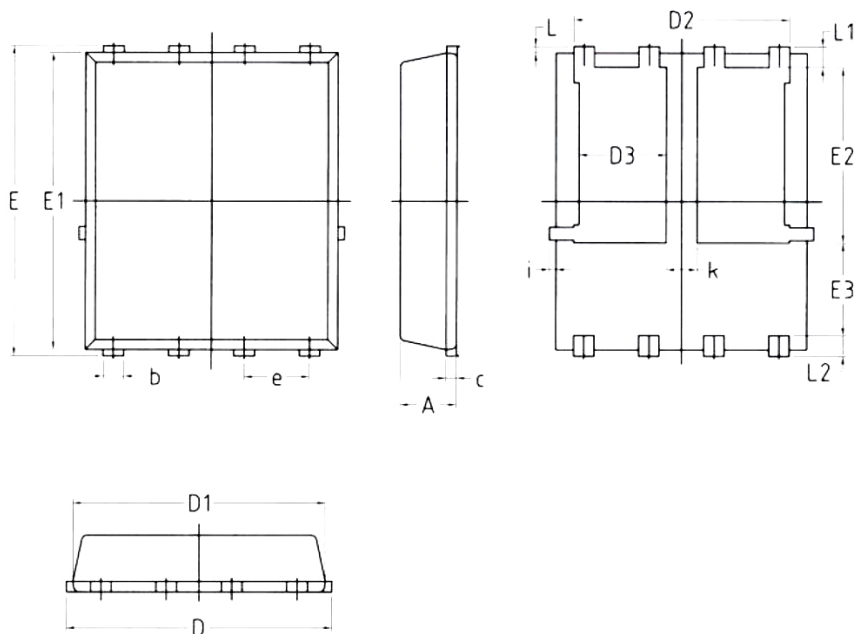
N and P Channel $\pm 40V$ MOSFET

Electrical Characteristics($T_a=25^\circ C$ Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Dynamic						
Qg	Total Gate Charge	N-Channel $V_{DS}=20V, V_{GS}=10V,$ $I_D=15A$	N-Ch		18	nC
			P-Ch		16	
Qgs	Gate-Source Charge	P-Channel $V_{DS}=-20V, V_{GS}=$ $-10V, I_D=-10A$	N-Ch		3.0	
			P-Ch		2.6	
Qgd	Gate-Drain Charge		N-Ch		2.5	
			P-Ch		2.2	
Ciss	Input Capacitance	N-Channel $V_{DS}=20V, V_{GS}=0V,$ $f=1MHz$	N-Ch		890	pF
			P-Ch		860	
Coss	Output Capacitance	P-Channel $V_{DS}=-20V, V_{GS}=0V,$ $f=1MHz$	N-Ch		170	
			P-Ch		150	
Crss	Reverse Transfer Capacitance		N-Ch		73	
			P-Ch		69	
T _{d(on)}	Turn-On Delay Time	N-Channel $V_{DD}=20V, V_{GS}=10V,$ $R_G=3\Omega$	N-Ch		6.5	ns
			P-Ch		6.0	
T _r	Turn-On Rise Time	P-Channel $V_{DD}=-20V, V_{GS}=-10V,$ $R_G=3\Omega$	N-Ch		13	
			P-Ch		11	
T _{d(off)}	Turn-Off Delay Time		N-Ch		19	
			P-Ch		17.5	
T _f	Turn-Off Fall Time		N-Ch		5.6	
			P-Ch		5.0	
T _{rr}	Reverse Recovery Time	$I_F=30A,$ $di/dt=100A/us$	N-Ch		55	ns
		$I_F=-25A,$ $di/dt=100A/us$	P-Ch		50	
Q _{rr}	Reverse Recovery Charge	$I_F=30A,$ $di/dt=100A/us$	N-Ch		24	nC
		$I_F=-25A,$ $di/dt=100A/us$	P-Ch		24	

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DFN5*6 Package Outline



SYMBOL	COMMON			
	MM		INCH	
	MIN	MAX	MIN	MAX
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.203 BSC		0.0080 BSC	
D	4.80	5.40	0.1890	0.2126
D1	4.80	5	0.1890	0.1969
D2	4.11	4.31	0.1620	0.1700
D3	1.60	1.80	0.0629	0.0708
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	3.30	3.50	0.1300	0.1378
E3	1.70	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0019	0.0098
L1	0.38	0.50	0.0150	0.0197
L3	0.38	0.50	0.0150	0.0197
i	/	0.18	/	0.0070
k	0.5	0.7	0.0197	0.0276