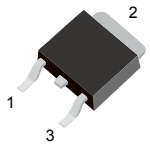
27A, 60V
N-CHANNEL POWER MOSFET

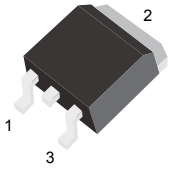
Features
Advanced process technology
Ultra low On-Resistance
175 ℃ OperatingTemperature
Fast Switching
RepetitiveAvalancheAllowed up toTjmax
Lead-Free

Product Summary

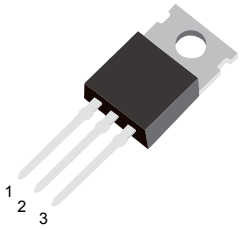
V_{DS}	60	V
$R_{DS(ON)}$ Max.	40	mΩ
I_D	27	A



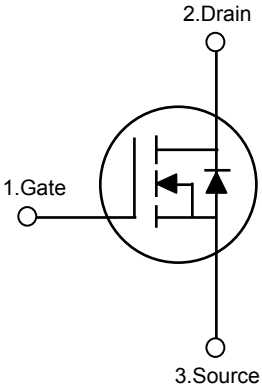
TO-252



TO-263



TO-220



ORDERING INFORMATION

Order Number	Package	Pin Assignment			Packing
		1	2	3	
HPD4006CTA	TO-252（DPAK）	G	D	S	Tube Reel
HPB400N06CTA	TO-263（D^2PAK）	G	D	S	Tube Reel
HPP400N06CTA	TO-220	G	D	S	Tube, BOX

ABSOLUTE MAX IMUM RATINGS （T_C=25℃, unless otherwise specified）

Parameter	Symbol	Conditions	Value	Unit
Drain source voltage	V_{DS}		60	V
Gate source voltage	V_{GS}		±20	
Continuous Drain Current	I_D	T_C=25℃	27	A
		T_C=100℃	19	
Pulsed Drain Current	I_D.pulse	T_C=25℃	108	
Avalanche energy, single pulse	E_{AS}	I_{AS}=30A, V_{GS}=25Ω	80	mJ
Peak Diode Recovery de/dt	dv/dt	I_D=27A,V_{GS}=20V, di/dt=200A/μs T_{jmax}=175℃	6	KV/μS
Power dissipation	P_{tot}	T_C=25℃	68	W
Operating and storage temperature	T_J, T_{stg}		-55 to 175	℃

Thermal characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance, junction-case	R_{thJC}		--	--	2.2	℃/W
SMD Version,Device on PCB	R_{thJA}	TO-252	--	--	75	
		TO-263	--	--	50	
		TO-220	--	--	60	

Electrical characteristics, at=25 ℃, unless otherwise specified

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=1mA	60	--	--	V
Gate source voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2	3	4	
Zero gate voltage drian current	I_{DSS}	V_{DS}=60V, V_{GS}=0V,T_J=25℃	--	0.1	1	μA
		V_{DS}=60V, V_{GS}=0V,T_J=125℃	--	1	100	
Gate-source leakage current	I_{GSS}	V_{DS}=20V, V_{GS}=0V	--	10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=15A	--	32	40	mΩ
Gate Resistance	R_G		--	1.5	--	Ω
Transconductance	g_{fs}	$\|V_{DS}\|$>2×$\|I_D\|$×$R_{DS(on)}$max I_D=15A	12	24	--	S

Dynamic Characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Iutput capacitance	C_{iss}	V_{GS}=0V V_{DS}=30V f=1MHz	--	780	--	pF
Output capacitance	C_{oss}		--	66	--	
Reverse transfer capacitance	C_{rss}		--	41	--	
Turn-on delay time	$t_{d(on)}$	V_{DS}=30V V_{GS}=10V I_D=15A R_G=22Ω	--	4.2	--	nS
Risse time	t_r		--	3.4	--	
Turn-off delay time	$t_{d(off)}$		--	16	--	
Fall time	t_f		--	2	--	

Gate Charge Characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Gate to source charge	Q_{gs}	V_{DS}=30V I_D=15A V_{GS}=0 to 10V	--	2.9	3.9	nC
Gate charge at threshold	$Q_{g(th)}$		--	1.5	1.9	
Gate to drain charge	Q_{gd}		--	5.7	8.5	
Switching charge	Q_{SW}		--	7.1	10	
Gate charge total	Q_g		--	13	17	
Output charge	Q_{DSS}	V_{DS}=30V, V_{GS}=0V	--	4.9	6.0	

Reverse Diode

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Diode continous forward current	I_S	T_C=25℃	--	--	30	A
Diode pulse current	$I_{S,pulse}$	T_C=25℃	--	--	108	
Diode forard voltage	V_{SD}	V_{GS}=0V I_F=27A, T_C=25℃	--	0.74	0.99	V
Gate plateau voltage	$V_{plateau}$	V_{DS}=30V, I_D=15A V_{GS}=0 to 10V	--	6.0	--	
Reverse recovery time	t_{rr}	V_R=30V, I_F=I_S di_F/dt=100A/μs	--	27	40	μS
Reverse recovery charge	Q_{rr}		--	30	50	nC

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