

CPH6347

Power MOSFET –20V, 39mΩ, –6A, Single P-Channel



ON Semiconductor®

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Features

- Low Gate Drive Voltage
- ESD Diode-Protected Gate
- Pb-Free, Halogen Free and RoHS Compliance

Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

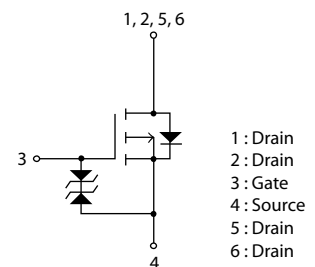
Parameter	Symbol	Value	Unit
Drain to Source Voltage	V_{DS}	–20	V
Gate to Source Voltage	V_{GS}	± 12	V
Drain Current (DC)	I_D	–6	A
Drain Current (Pulse) $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	I_{DP}	–24	A
Power Dissipation When mounted on ceramic substrate ($900\text{mm}^2 \times 0.8\text{mm}$)	P_D	1.6	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	–55 to +150	$^\circ\text{C}$

Thermal Resistance Ratings

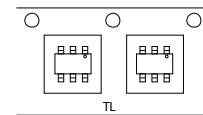
Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate ($900\text{mm}^2 \times 0.8\text{mm}$)	$R_{\theta JA}$	78.1	$^\circ\text{C/W}$

V_{DS}	$R_{DS(on)}$ Max	I_D Max
–20V	39mΩ @ –4.5V	–6A
	66mΩ @ –2.5V	
	102mΩ @ –1.8V	

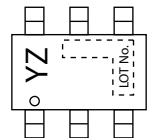
Electrical Connection P-Channel



Packing Type : TL



Marking



Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1\text{mA}$, $V_{GS} = 0\text{V}$	-20			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -20\text{V}$, $V_{GS} = 0\text{V}$			-1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS} = \pm 8\text{V}$, $V_{DS} = 0\text{V}$			± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = -10\text{V}$, $I_D = -1\text{mA}$	-0.4		-1.4	V
Forward Transconductance	g_{FS}	$V_{DS} = -10\text{V}$, $I_D = -3\text{A}$	4.3	7.3		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D = -3\text{A}$, $V_{GS} = -4.5\text{V}$		30	39	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D = -1.5\text{A}$, $V_{GS} = -2.5\text{V}$		44	66	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D = -0.6\text{A}$, $V_{GS} = -1.8\text{V}$		68	102	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS} = -10\text{V}$, $f = 1\text{MHz}$		860		pF
Output Capacitance	C_{oss}			170		pF
Reverse Transfer Capacitance	C_{rss}			130		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		10		ns
Rise Time	t_r			48		ns
Turn-OFF Delay Time	$t_d(off)$			100		ns
Fall Time	t_f			78		ns
Total Gate Charge	Q_g	$V_{DS} = -10\text{V}$, $V_{GS} = -4.5\text{V}$, $I_D = -6\text{A}$		10.5		nC
Gate to Source Charge	Q_{gs}			2.0		nC
Gate to Drain "Miller" Charge	Q_{gd}			3.0		nC
Forward Diode Voltage	V_{SD}	$I_S = -6\text{A}$, $V_{GS} = 0\text{V}$		-0.82	-1.5	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Switching Time Test Circuit