

# 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  $T_a = 25^\circ\text{C}$

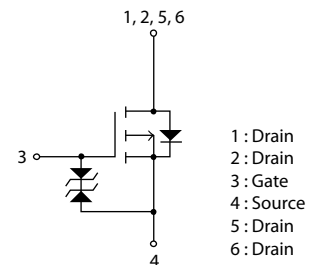
Parameter	Symbol	Value	Unit
Drain to Source Voltage	$V_{DS}$	–20	V
Gate to Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current (DC)	$I_D$	–6	A
Drain Current (Pulse) $PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	$I_{DP}$	–24	A
Power Dissipation When mounted on ceramic substrate ( $900\text{mm}^2 \times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

### Thermal Resistance Ratings

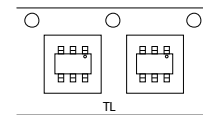
Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate ( $900\text{mm}^2 \times 0.8\text{mm}$ )	$R_{\theta JA}$	78.1	$^\circ\text{C/W}$

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

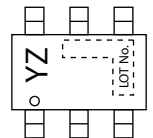
### Electrical Connection P-Channel



### 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

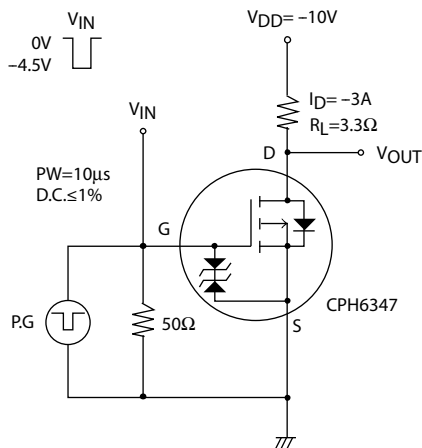
See detailed ordering and shipping information on page 5 of this data sheet.

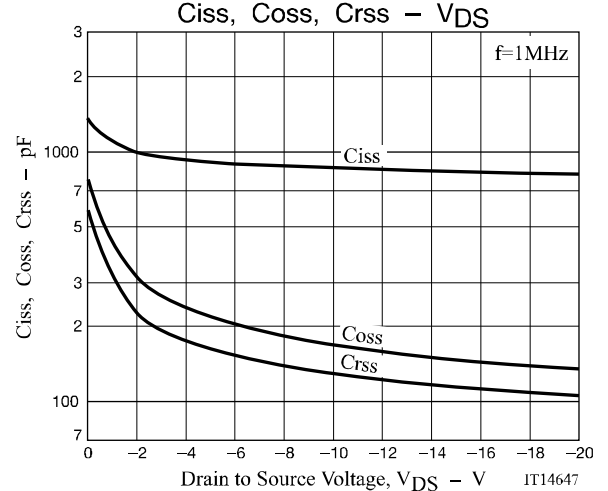
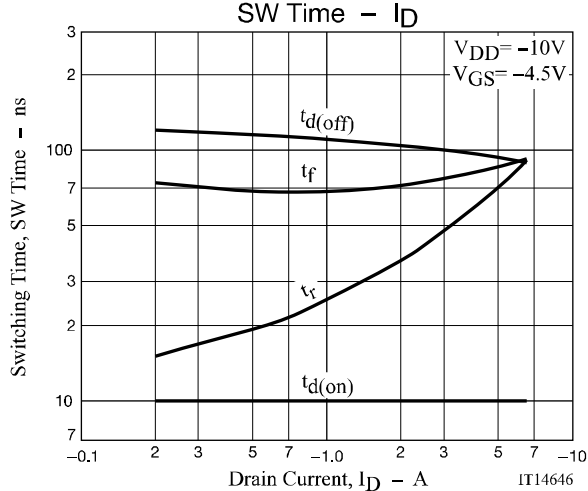
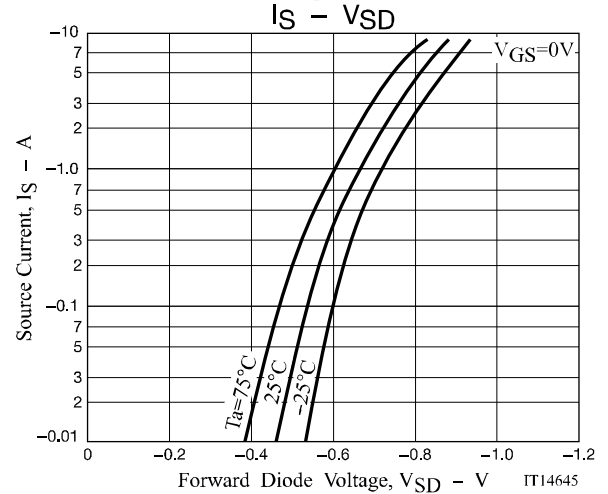
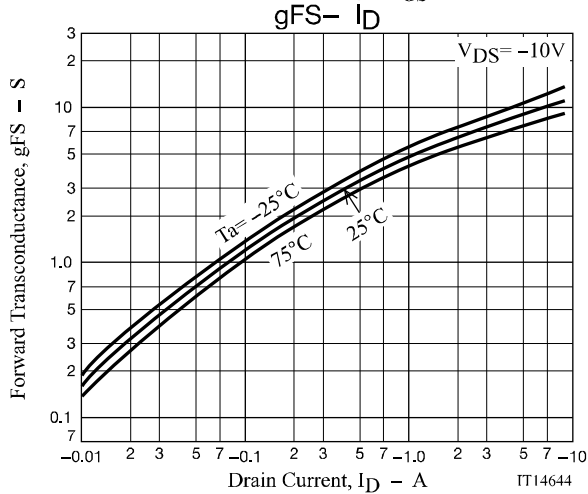
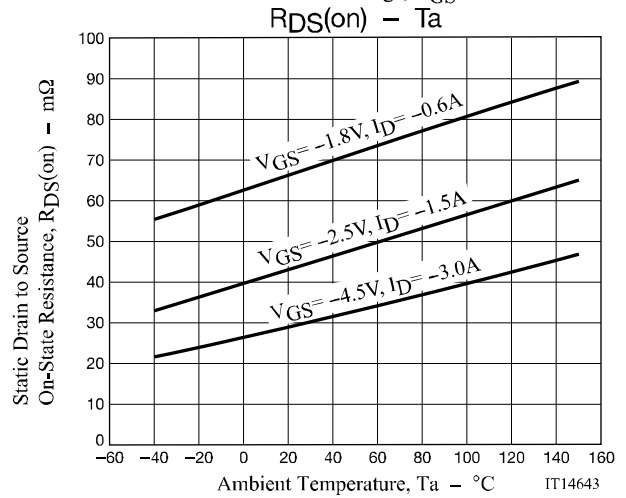
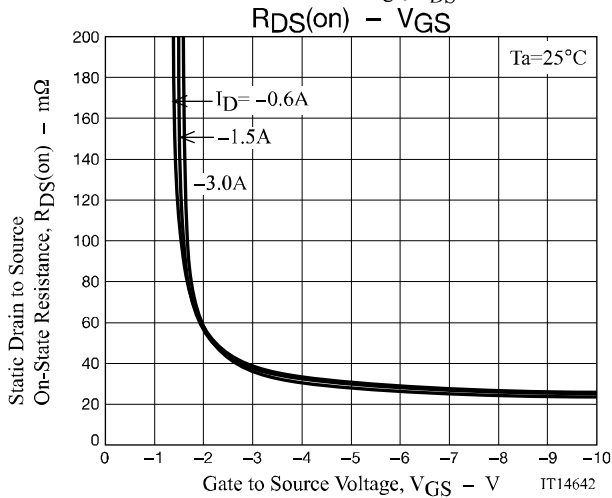
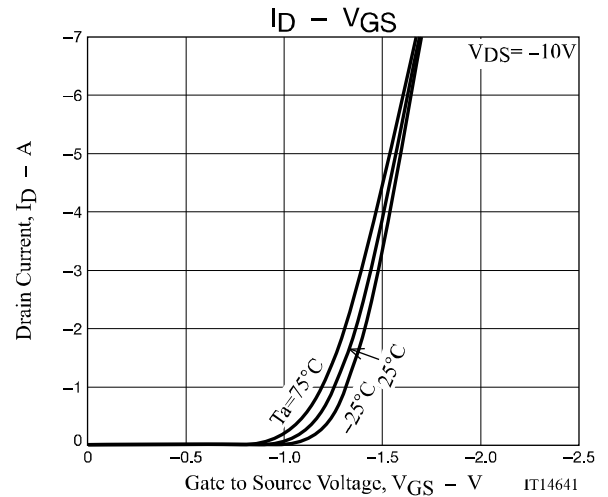
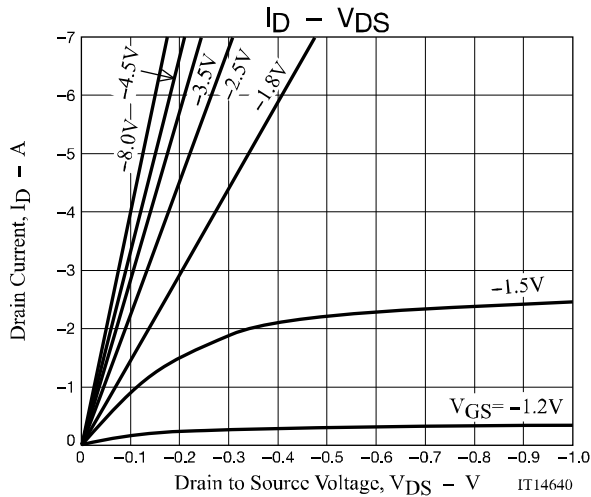
## Electrical Characteristics at $T_a = 25^\circ\text{C}$

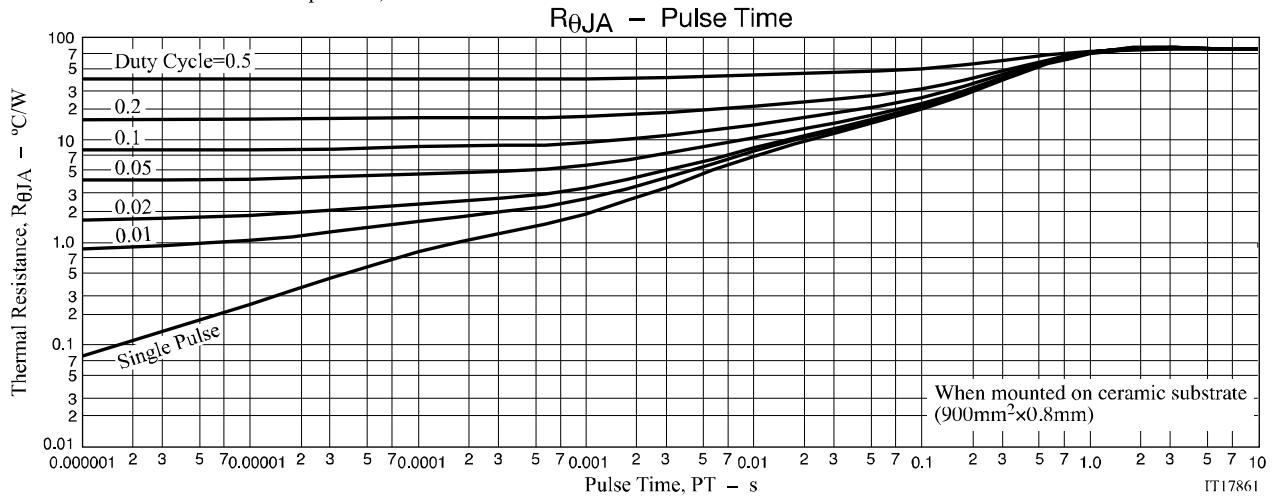
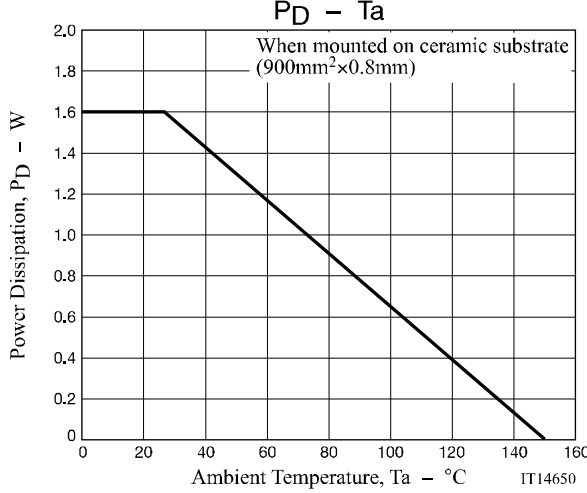
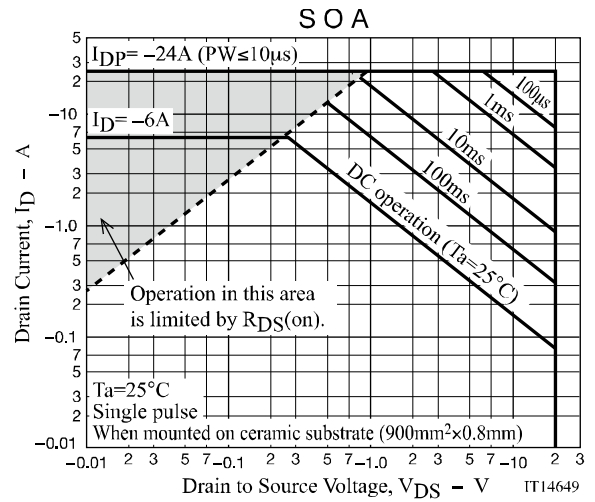
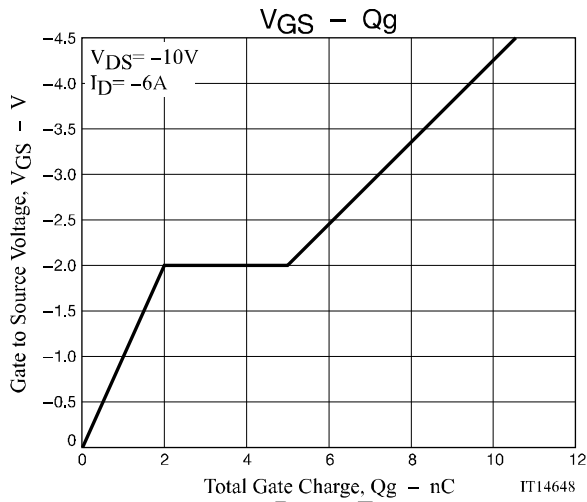
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1\text{mA}$ , $V_{GS} = 0\text{V}$	-20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -20\text{V}$ , $V_{GS} = 0\text{V}$			-1	$\mu\text{A}$
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 8\text{V}$ , $V_{DS} = 0\text{V}$			$\pm 10$	$\mu\text{A}$
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









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