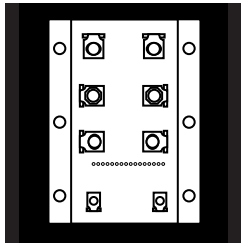


Preliminary Data Sheet

OMS300N06HL OMS120L60HL
OMS240N10HL OMS100F60HL

HALF-BRIDGE, MULTI-CHIP MODULES IN AN INDUSTRIAL ISOLATED PACKAGE



**60 To 600 Volt, 100 To 300 Amp Modules,
Half-Bridge Configuration**

FEATURES

- Isolated Heat Sink
- Low Inductance Design
- Fast Switching Speed
- Low On Voltage
- Easy-To-Connect To Package

DESCRIPTION

These modules are ideally suited for high density, high reliability switching applications such as Motion Control, UPS and high power SMPS. These multi-chip modules incorporate in one package the power semiconductors preconnected in a half-bridge configuration.

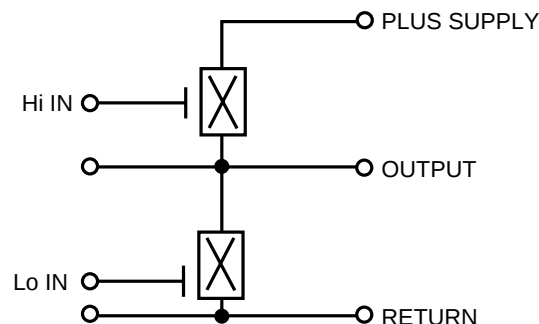
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GENERAL CHARACTERISTICS (Per Switch) @ 25°C

Part Number	Power Device	Voltage (V)*	Current (A)	$R_{DS(on)}$ or $V_{CE(sat)}$	Fall Time
OMS300N06HL	MOSFET	60	300	4 m ohms	-
OMS240N10HL	MOSFET	100	240	8 m ohms	-
OMS120L60HL	IGBT	600	150	1.8 Volts	1 μ s
OMS100F60HL	IGBT	600	150	2.7 Volts	500 ns

*Other voltages available.

SCHEMATIC



Note: IGBT's have anti-parallel diodes included.

OMS300N06HL OMS240N10HL OMS120L60HL OMS100F60HL

ELECTRICAL CHARACTERISTICS: OMS300N06HL/Per Switch (T_C = 25° unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage, I _D = 1000 µA, V _{GS} = 0	V _{BR(DSS)}	60	-	-	V
Zero Gate Voltage Drain Current = V _{GS} , V _{DS} = Max. Rat.	I _{DSS}	-	-	50	µA
V _{DS} = Max. Rat. x 0.8, T _J = 125°C		-	-	500	µA
Gate-Body Leakage, V _{GS} = ±20 V	I _{GSS}	-	-	±500	nA
ON CHARACTERISTICS					
Gate-Threshold Voltage, V _{DS} = V _{GS} , I _D = 1000 µA	V _{GS(th)}	2.0	-	4.0	V
Static Drain-Source On-Resistance, V _{GS} = 10 Vdc, I _D = 150 A	R _{DS(on)}	-	-	4.0	m
T _J = 100°C		-	-	8.0	m

DYNAMIC CHARACTERISTICS

Forward Transconductance	V _{DS} > I _{D(on)} X R _{DS(on)} Max., I _D = 120 A	g _{fs}	60	-	-	mho
Input Capacitance	V _{DS} = 25 V,	C _{iss}	-	12000	-	pF
Output Capacitance	V _{GS} = 0,	C _{oss}	-	4000	-	pF
Reverse Transfer Capacitance	f = 1.0 MHz	C _{rss}	-	800	-	pF

SWITCHING CHARACTERISTICS

Turn-On Delay Time	V _{DD} = 30 V, I _D = 300 A, R _{GS} = 9.1	t _{d(on)}	-	20	-	ns
Rise Time		t _r	-	225	-	ns
Turn-Off Delay Time		t _{d(off)}	-	70	-	ns
Fall Time		t _f	-	125	-	ns

SOURCE DRAIN DIODE CHARACTERISTICS

Source - Drain Current	I _{SD} = 300 A, V _{GS} = 0	I _{SD}	-	-	300	A
Source - Drain Current (Pulsed)		I _{SDM} *	-	-	100	A
Forward On-Voltage		V _{SD}	-	-	1.1	V
Reverse Recovery Time		t _{rr}	-	50	-	ns
Reverse Recovered Charge		Q _r	-	0.4	-	µC

ELECTRICAL CHARACTERISTICS: OMS240N10HL/Per Switch (T_C = 25° unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage, I _D = 1000 µA, V _{GS} = 0	V _{BR(DSS)}	100	-	-	V
Zero Gate Voltage Drain Current = V _{GS} , V _{DS} = Max. Rat.	I _{DSS}	-	-	1000	µA
V _{DS} = Max. Rat. x 0.8, T _J = 125°C		-	-	4000	µA
Gate-Body Leakage, V _{GS} = ±20 V	I _{GSS}	-	-	±500	nA
ON CHARACTERISTICS					
Gate-Threshold Voltage, V _{DS} = V _{GS} , I _D = 1000 µA	V _{GS(th)}	2.0	-	4.0	V
Static Drain-Source On-Resistance, V _{GS} = 10 Vdc, I _D = 120 A	R _{DS(on)}	-	-	8.0	m
T _J = 100°C		-	-	16	m

DYNAMIC CHARACTERISTICS

Forward Transconductance	V _{DS} > I _{D(on)} X R _{DS(on)} Max., I _D = 120 A	g _{fs}	100	-	-	mho
Input Capacitance	V _{DS} = 25 V,	C _{iss}	-	1600	-	pF
Output Capacitance	V _{GS} = 0,	C _{oss}	-	4800	-	pF
Reverse Transfer Capacitance	f = 1.0 MHz	C _{rss}	-	1200	-	pF

SWITCHING CHARACTERISTICS

Turn-On Delay Time	V _{DD} = 80 V, I _D = 120 A, R _{GS} = 50 , V _{GS} = 10 V	t _{d(on)}	-	90	-	ns
Rise Time		t _r	-	270	-	ns
Turn-Off Delay Time		t _{d(off)}	-	200	-	ns
Fall Time		t _f	-	210	-	ns

SOURCE DRAIN DIODE CHARACTERISTICS

Source - Drain Current	I _{SD} = 240 A, V _{GS} = 0, di/dt = 100 A/µSec	I _{SD}	-	-	240	A
Source - Drain Current (Pulsed)		I _{SDM} *	-	-	960	A
Forward On-Voltage		V _{SD}	-	-	1.6	V
Reverse Recovery Time		t _{rr}	-	180	-	ns
Reverse Recovered Charge		Q _r	-	8.0	-	µC

* Indicates Pulse Test 300 µsec, Duty Cycle 1.5%

OMS300N06HL OMS240N10HL OMS120L60HL OMS100F60HL

ELECTRICAL CHARACTERISTICS: OMS120L60HL/Per Switch ($T_C = 25^\circ$ unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Collector Emitter Breakdown Voltage, $I_C = 500 \mu A$, $V_{CE} = 0 V$	$V_{(BR)CES}$	600	-	-	V
Zero Gate Voltage Drain Current, $V_{GE} = 0$, $V_{CE} = \text{Max. Rat.}$	I_{CES}	-	-	0.5	mA
$V_{CE} = 0.8 \text{ Max. Rat.}$, $V_{GE} = 0$, $T_J = 125^\circ C$		-	-	2.0	mA
Gate Emitter Leakage Current, $V_{GS} = \pm 20 V$, $V_{CE} = 0 V$	I_{GES}	-	-	± 200	nA

ON CHARACTERISTICS

Gate-Threshold Voltage, $V_{CE} = V_{GE}$, $I_D = .5 \text{ mA}$	$V_{GE(TH)}$	2.5	-	5.0	V
Collector Emitter Saturation Voltage, $V_{GE} = 15 V$, $I_C = 120 A$, $T_J = 125^\circ C$	$V_{CE(sat)}$	-	-	1.8	V

DYNAMIC CHARACTERISTICS

Forward Transconductance, $V_{CE} = 10 V$, $I_C = 120 A$	g_{fs}	60	-	-	S
Input Capacitance	$V_{GE} = 0$, $V_{CE} = 25 V$, $f = 1.0 \text{ MHz}$	C_{iss}	-	200	pF
Output Capacitance		C_{oss}	-	600	pF
Reverse Transfer Capacitance		C_{rss}	-	500	pF

SWITCHING CHARACTERISTICS

Turn-On Delay Time	$V_{CC} = 480 V$, $I_C = 120 A$, $R_{GS} = 2.7 \Omega$, $V_{GE} = 15 V$	$t_{d(on)}$	-	50	-	ns
Rise Time		t_r	-	200	-	ns
Turn-Off Delay Time		$t_{d(off)}$	-	600	-	ns
Fall Time		t_f	-	500	-	ns

SOURCE DRAIN DIODE CHARACTERISTICS

Maximum Forward Voltage	$I_F = 120 A$, $T_C = 25^\circ C$	V_F	-	-	1.85	V
	$I_F = 120 A$, $T_J = 125^\circ C$		-	-	1.5	
Maximum Reverse Current	$V_R = 600 V$, $T_C = 25^\circ C$	I_R	-	-	400	μA
	$V_R = 480 V$, $T_J = 125^\circ C$		-	-	28	
Reverse Recovery Time	$I_F = 1 A$, $di/dt = 200 A/\mu S$ $V_R = 30 V$, $T_J = 25^\circ C$	t_{rr}	-	-	50	nS

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ELECTRICAL CHARACTERISTICS: OMS100F60HL/Per Switch ($T_C = 25^\circ$ unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Collector Emitter Breakdown Voltage, $I_C = 500 \mu A$, $V_{CE} = 0 V$	$V_{(BR)CES}$	600	-	-	V
Zero Gate Voltage Drain Current, $V_{GE} = 0$, $V_{CE} = \text{Max. Rat.}$	I_{CES}	-	-	0.5	mA
$V_{CE} = 0.8 \text{ Max. Rat.}$, $V_{GE} = 0$, $T_J = 125^\circ C$		-	-	2	mA
Gate Emitter Leakage Current, $V_{GS} = \pm 20 V$, $V_{CE} = 0 V$	I_{GES}	-	-	± 200	nA

ON CHARACTERISTICS

Gate-Threshold Voltage, $V_{CE} = V_{GE}$, $I_D = .5 \text{ mA}$	$V_{GE(TH)}$	4.5	-	6.5	V
Collector Emitter Saturation Voltage, $V_{GE} = 15 V$, $I_C = 100 A$, $T_J = 125^\circ C$	$V_{CE(sat)}$	-	-	2.7	V

DYNAMIC CHARACTERISTICS

Forward Transconductance, $V_{CE} = 10 V$, $I_C = 100 A$	g_{fs}	50	-	-	S
Input Capacitance	$V_{GE} = 0$, $V_{CE} = 25 V$, $f = 1.0 \text{ MHz}$	C_{iss}	-	8000	pF
Output Capacitance		C_{oss}	-	700	pF
Reverse Transfer Capacitance		C_{rss}	-	200	pF

SWITCHING CHARACTERISTICS

Turn-On Delay Time	$V_{CC} = 480 V$, $I_C = 100 A$, $R_{GS} = 2.7 \Omega$, $V_{GE} = 15 V$	$t_{d(on)}$	-	50	-	ns
Rise Time		t_r	-	250	-	ns
Turn-Off Delay Time		$t_{d(off)}$	-	300	-	ns
Fall Time		t_f	-	600	-	ns

SOURCE DRAIN DIODE CHARACTERISTICS

Maximum Forward Voltage	$I_F = 120 A$, $T_C = 25^\circ C$	V_F	-	-	1.85	V
	$I_F = 120 A$, $T_J = 125^\circ C$		-	-	1.5	
Maximum Reverse Current	$V_R = 600 V$, $T_C = 25^\circ C$	I_R	-	-	400	μA
	$V_R = 480 V$, $T_J = 125^\circ C$		-	-	28	
Reverse Recovery Time	$I_F = 1 A$, $di/dt = 200 A/\mu S$ $V_R = 30 V$, $T_J = 25^\circ C$	t_{rr}	-	-	50	nS

OMS300N06HL OMS240N10HL OMS120L60HL OMS100F60HL

ABSOLUTE MAXIMUM RATINGS Per Switch ($T_C = 25^{\circ}\text{C}$ unless otherwise noted)
IGBT / MOSFET

Parameters		300N06HL	240N10HL	120L60HL	100F60HL	Units
Plus Supply		60	100	600	600	V
V_{CER}	($R_{\text{ge}} = 20\text{ K}$)	60	100	600	600	V
$I_C @ T_C = 25^{\circ}\text{C}$	Continuous Drain Current	300	240	150	150	A
$I_C @ T_J = 100^{\circ}\text{C}$	Continuous Drain Current	260	180	120	100	A
I_C Pulsed	Pulsed Drain Current ¹	900	900	400	400	A
Junction-To-Case	Linear Derating Factor	.2	3.3	3.3	3.3	W/ $^{\circ}\text{C}$
Junction-To-Ambient	Linear Derating Factor	.02	.02	.02	.02	W/ $^{\circ}\text{C}$
R_{thJC}	Junction-To-Case	.50	.30	.30	.30	$^{\circ}\text{C/W}$
R_{thJA}	Junction-To-Ambient	50	50	50	50	$^{\circ}\text{C/W}$

Rectifier

PIV		60	100	600	600	V
I_O		300	240	120	100	A
t_{rr}		50	180	35	35	nsec

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MECHANICAL OUTLINE (LP-8)

