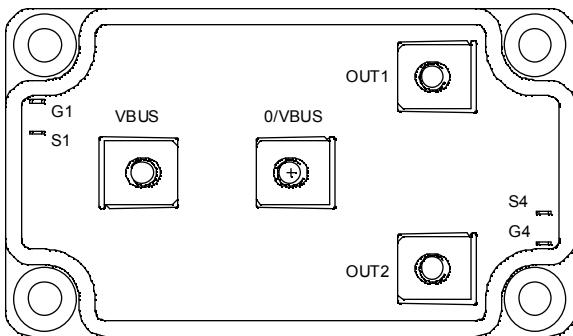
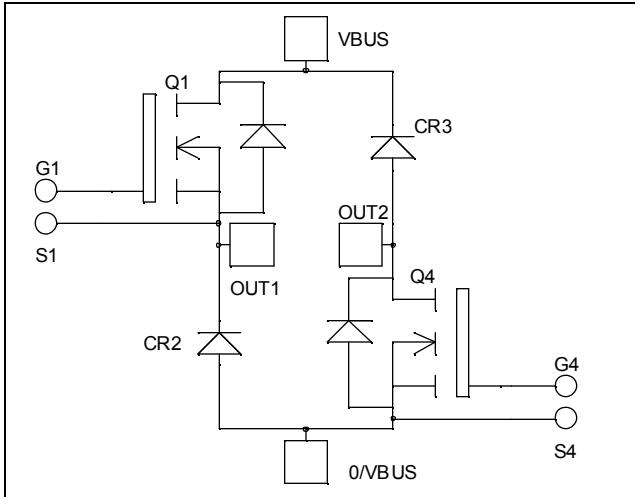


**Asymmetrical - bridge
MOSFET Power Module**

$V_{DSS} = 500V$
 $R_{DSon} = 38m\Omega$ typ @ $T_j = 25^\circ C$
 $I_D = 90A$ @ $T_c = 25^\circ C$


Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{DSS}	Drain - Source Breakdown Voltage	500	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	A
		$T_c = 80^\circ C$	
I_{DM}	Pulsed Drain current	360	
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	45	$m\Omega$
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	W
I_{AR}	Avalanche current (repetitive and non repetitive)		
E_{AR}	Repetitive Avalanche Energy	46	A
E_{AS}	Single Pulse Avalanche Energy	50	mJ
		2500	

 **CAUTION:** These Devices are sensitive to Electrostatic Discharge. Proper Handing Procedures Should Be Followed. See application note APT0502 on www.microsemi.com

All ratings @ $T_j = 25^\circ\text{C}$ unless otherwise specified

Electrical Characteristics

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0\text{V}$, $V_{DS} = 500\text{V}$	$T_j = 25^\circ\text{C}$			200	μA
		$V_{GS} = 0\text{V}$, $V_{DS} = 400\text{V}$	$T_j = 125^\circ\text{C}$			1000	
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 10\text{V}$, $I_D = 45\text{A}$			38	45	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}$, $I_D = 5\text{mA}$		3		5	V
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 30\text{ V}$, $V_{DS} = 0\text{V}$				± 150	nA

Dynamic Characteristics

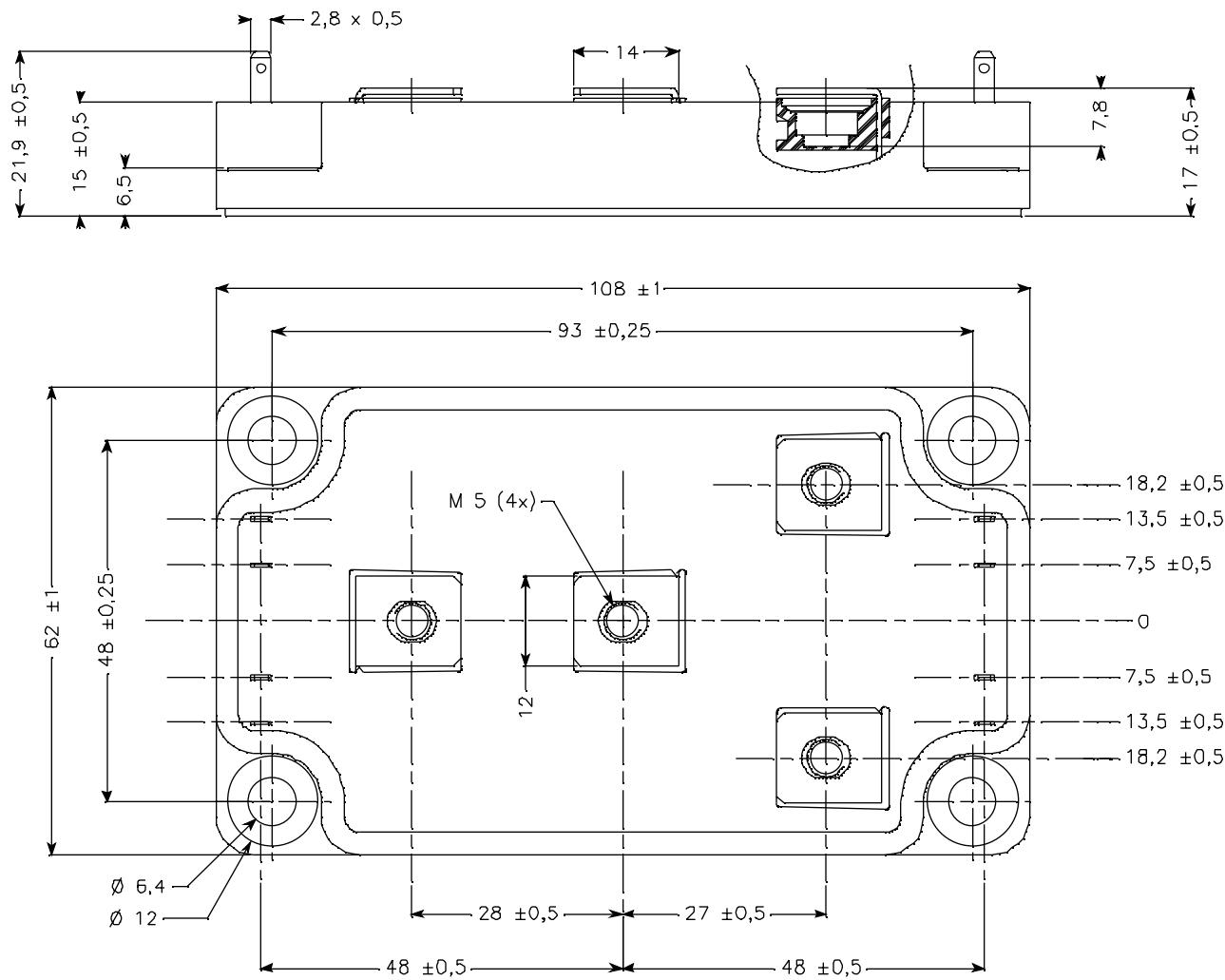
Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$ $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$			11.2		nF
C_{oss}	Output Capacitance				2.4		
C_{rss}	Reverse Transfer Capacitance				0.18		
Q_g	Total gate Charge	$V_{GS} = 10\text{V}$ $V_{Bus} = 250\text{V}$ $I_D = 90\text{A}$			246		nC
Q_{gs}	Gate – Source Charge				66		
Q_{gd}	Gate – Drain Charge				130		
$T_{d(on)}$	Turn-on Delay Time		Inductive switching @ 125°C			18	ns
T_r	Rise Time	$V_{GS} = 15\text{V}$			35		
$T_{d(off)}$	Turn-off Delay Time	$V_{Bus} = 333\text{V}$			87		
T_f	Fall Time	$I_D = 90\text{A}$			77		
E_{on}	Turn-on Switching Energy	Inductive switching @ 25°C $V_{GS} = 15\text{V}$, $V_{Bus} = 333\text{V}$ $I_D = 90\text{A}$, $R_G = 2\Omega$			1510		μJ
E_{off}	Turn-off Switching Energy				1452		
E_{on}	Turn-on Switching Energy		Inductive switching @ 125°C			2482	μJ
E_{off}	Turn-off Switching Energy	$V_{GS} = 15\text{V}$, $V_{Bus} = 333\text{V}$	$I_D = 90\text{A}$, $R_G = 2\Omega$			1692	

Diode ratings and characteristics

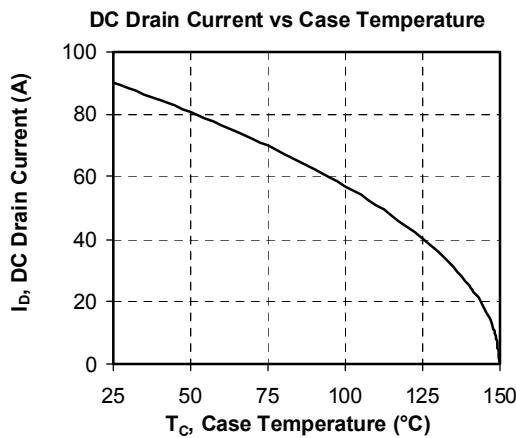
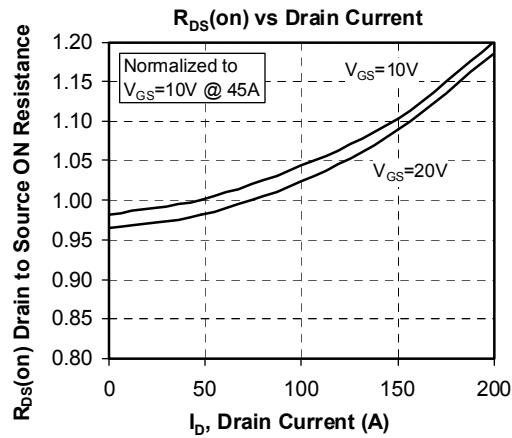
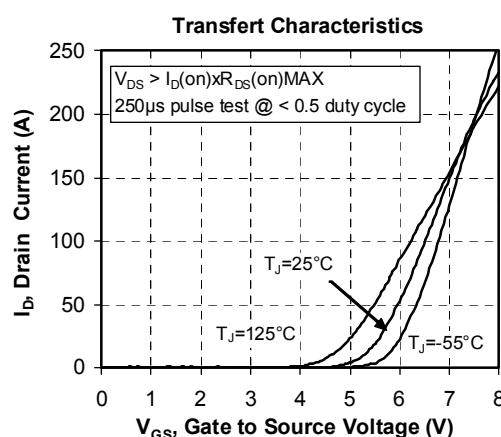
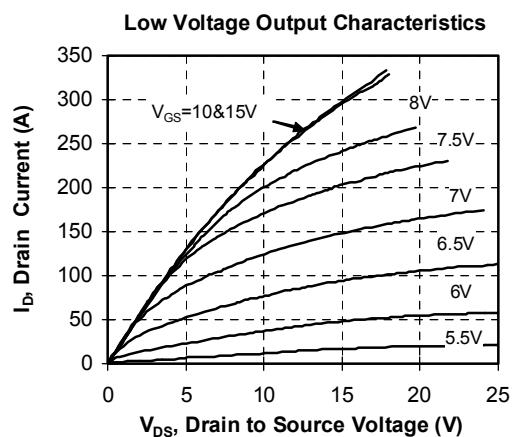
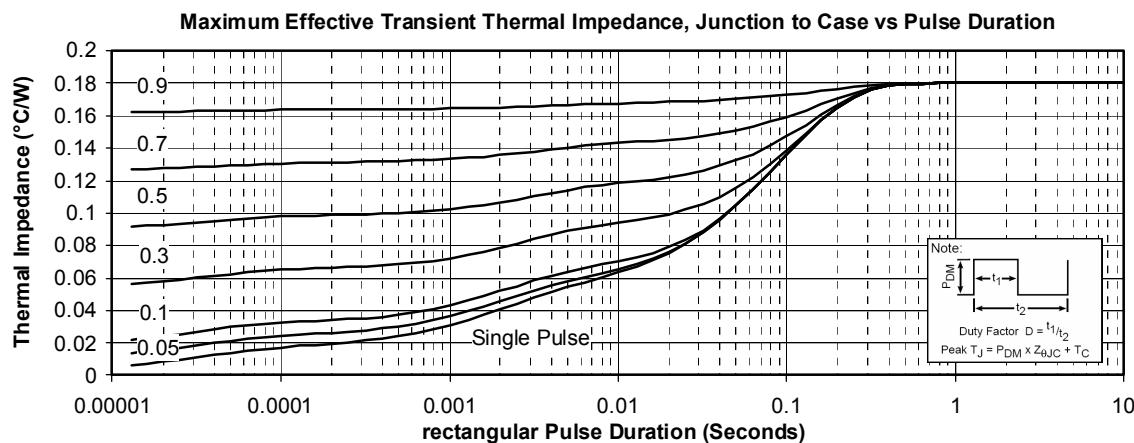
Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit	
V_{RRM}	Maximum Peak Repetitive Reverse Voltage			600			V	
I_{RM}	Maximum Reverse Leakage Current	$V_R = 600\text{V}$	$T_j = 25^\circ\text{C}$			250	μA	
			$T_j = 125^\circ\text{C}$			500		
I_F	DC Forward Current			$T_c = 80^\circ\text{C}$		100	A	
V_F	Diode Forward Voltage	$I_F = 100\text{A}$				1.6	1.8	
		$I_F = 200\text{A}$				1.9		
		$I_F = 100\text{A}$	$T_j = 125^\circ\text{C}$			1.4		
t_{rr}	Reverse Recovery Time	$I_F = 100\text{A}$ $V_R = 400\text{V}$ $di/dt = 200\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$			180	ns	
			$T_j = 125^\circ\text{C}$			220		
Q_{rr}	Reverse Recovery Charge		$T_j = 25^\circ\text{C}$			390	nC	
			$T_j = 125^\circ\text{C}$			1450		

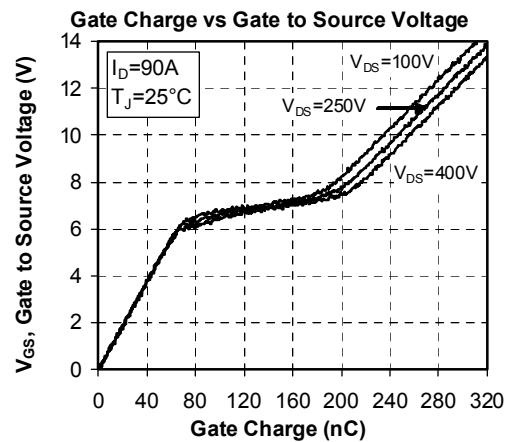
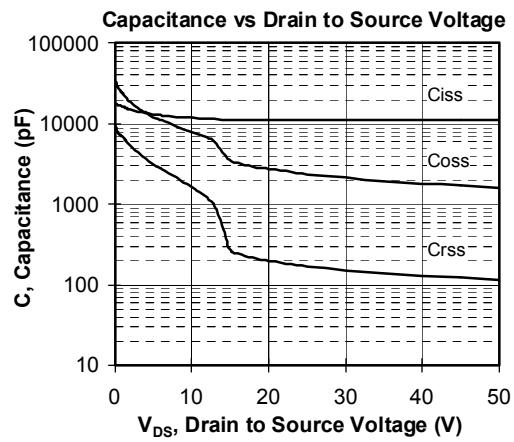
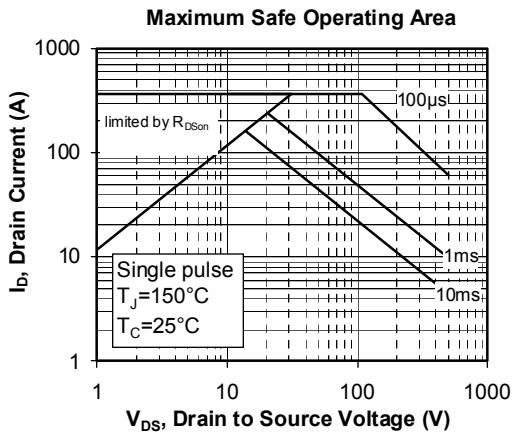
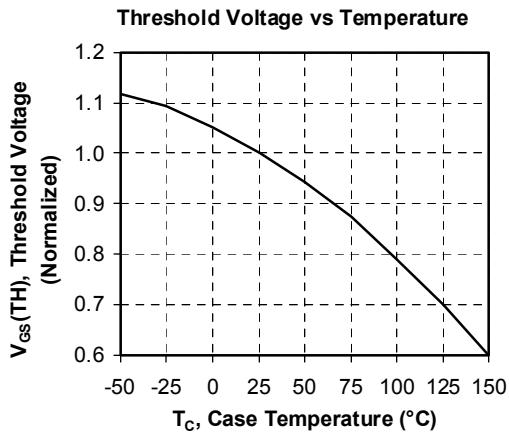
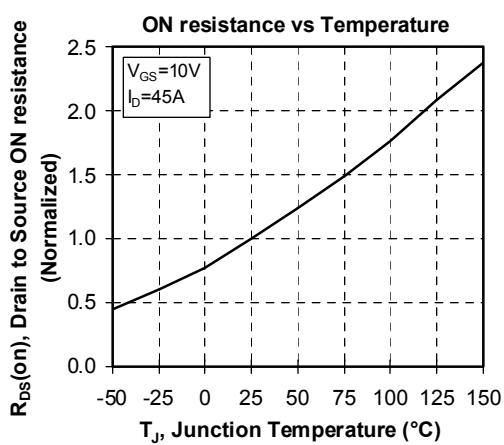
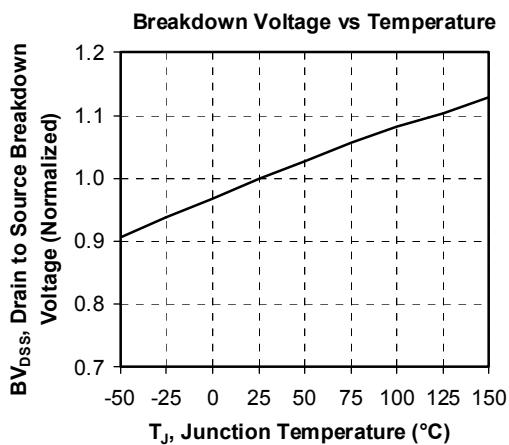
Thermal and package characteristics
Symbol **Characteristic**

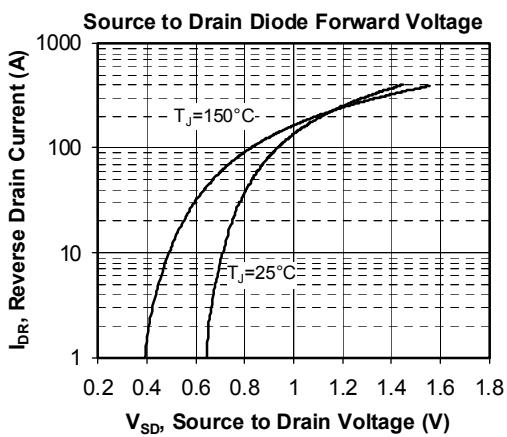
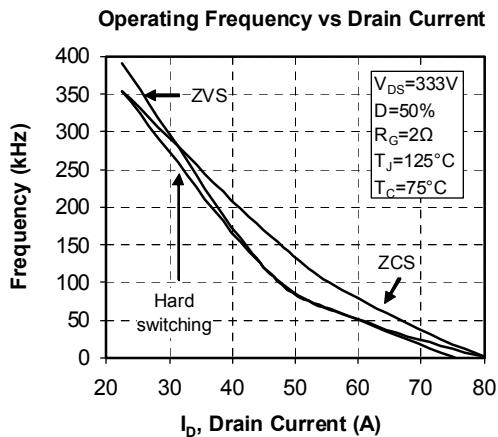
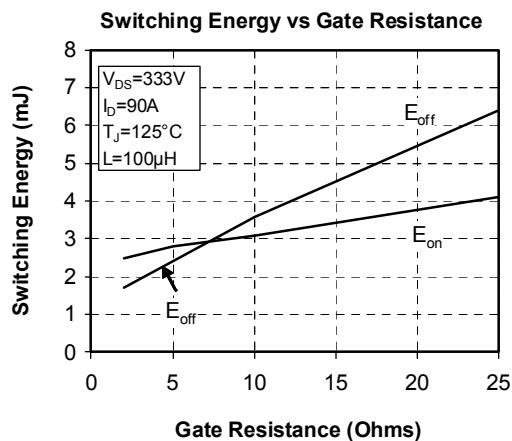
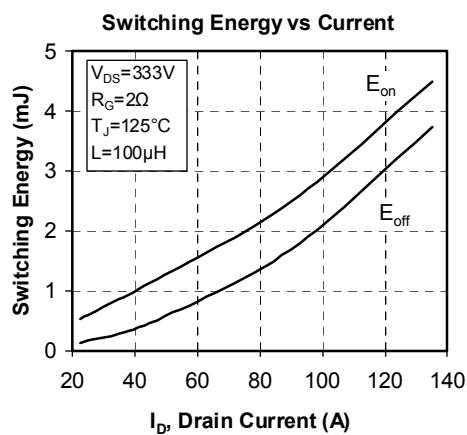
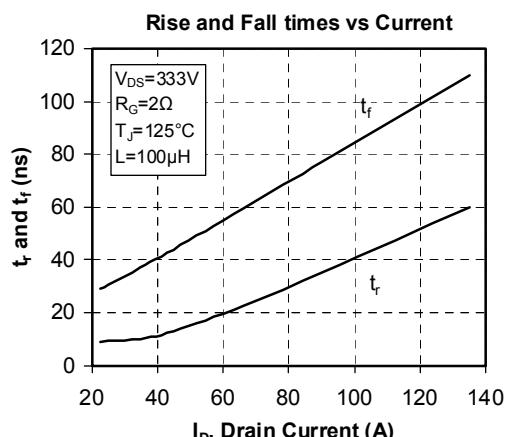
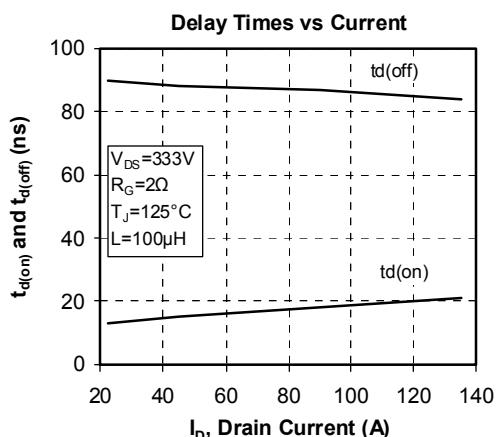
			Min	Typ	Max	Unit
R_{thJC}	Junction to Case Thermal Resistance	Transistor			0.18	°C/W
		Diode			0.6	
V_{ISOL}	RMS Isolation Voltage, any terminal to case t = 1 min, $I_{isol} < 1\text{mA}$, 50/60Hz		2500			V
T_J	Operating junction temperature range		-40		150	°C
T_{STG}	Storage Temperature Range		-40		125	
T_C	Operating Case Temperature		-40		100	
Torque	Mounting torque	To heatsink	M6	3	5	N.m
		For terminals	M5	2	3.5	
Wt	Package Weight				280	g

SP6 Package outline (dimensions in mm)

 See application note APT0601 - Mounting Instructions for SP6 Power Modules on www.microsemi.com

Typical Performance Curve







Microsemi reserves the right to change, without notice, the specifications and information contained herein

Microsemi's products are covered by one or more of U.S patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 and foreign patents. U.S and Foreign patents pending. All Rights Reserved.