FST 3SGTE Breakout Board v1.0 Information

The FST 3SGTE breakout board makes it easy to connect any stand-alone Engine Management System to a 2nd or 3rd-Generation 3SGTE engine. The board maps the essential 3SGTE ECU pins to a set of solder pads, and uses a series of jumpers to account for the differences in 3SGTE models. Circuitry for an onboard 3- or 4-bar MAP sensor is included, as is circuitry for dual VR-conditioning ICs. This board is designed to be used with the onboard MAP sensor or a separate aftermarket MAP sensor – no provision has been made for factory MAP sensors[1].

Dimensions: the nominal size of the board is 6.3" x 2.85" It is sized to fit in ½ of a standard Eurocard slot. Dotted lines indicate cut lines to fit it in a 6" case (e.g. LMB EAS-500). The output solder holes are sized for 18awg (injectors, 12V power & ground) and 20awg (sensors) un-tinned wire.

MAP Sensor – The board is set up for either a Freescale MPXH6300AC6U-ND (3-bar) or MPXH6400 (4-bar) MAP sensor, mounted on a small proprietary daughterboard and attached using a 4-pin 90 degree header. The MAP sensor is powered by the ECU's +5V sensor power. Components C1 (47pF), C2 (100nF) and R1 (51KOhm) need to be populated to use the MAP sensor.

VR Sensor Circuits – For certain applications, dual VR signal conditioning circuit traces have been provided on the board. These circuits are isolated from the main board by jumpers (for G0, G1, G2 and Ne). For most applications, these jumpers, as well as components C3-C10, R2-R13, and ICs 1 & 2 are not used and should be left unpopulated.

Breakout Board Jumpers

Jumper	Output	Notes
J1	EGR	A23 (1991), A6 (1993+)
J2	RS0 (IAC)	A22 (1991), A10 (1993+)
J3	G2 (CAM Sensor)	A2 (1991), A5 (1993+)
J4	Ne (Crank Sensor)	A1 (1991), A4 (1993+)
J5	TPC1 (TVSV)	A6 (1991), A2 (1993+)
J6	TVIS	A18 (1991), A1 (1993+), NA(Gen 3)
J7	THA (air temp sensor)	*B3 (Gen 2),* B10 (Gen3)
J8	G0 (Timing Ground)	B16 (1991), A17 (1993+)
J9	Knock Sensor	B5 (1991), B13 (1993+)
J10	FP hi/lo	D6 (1991), NA (1993+)
J11	PSCT	D14 (1991), D6 (1993), NA(Gen 3)
J12	Fuel Pump Circuit	A17 (1991), D14 (1993+)
J13	Trigger VR Circuit Mode	
J14	Home VR Circuit Mode	

[1] If you wish to use the stock MAP sensor, consult the pinout chart at the end of the document. Generally, the unused pin of JP9 will provide the factory PIM signal.

Jumper Settings:

1991-1992 USDM Mr2 Turbo, 1990-1991 JDM MR2 Turbo, 1990-1991 Celica All-Trac: ALL jumpers set to pins 2 &3 *EXCEPT J1 (set to 1 & 2)*

1993+ USDM Mr2 Turbo, 1992-1993 Gen 2 JDM MR2 Turbo, 1992-1993 Celica All-Trac: All jumpers set to pins 1&2 EXCEPT J10, *J1* and J7 (set to 2 & 3)

Gen 3 (all): All jumpers set to 1&2 EXCEPT J6 & J11 (no jumpers /leave open), *J1 set to 2 & 3*

MAT input: Gen 2 – use MAT pin on output edge of the board. Gen 3 uses B10. Output goes to THA hole on output side.

BOARD ADDENDA:

VR Circuits:
If you are populating the VR circuit(s), please note the following:

- Pins 3 & 4 are swapped. To fix you can either bridge pin 3 to pin 4 or cut pin 4 and bend pin 3 to fit in the pin 4 pad on the circuit board.
- Pin 14 should be tied to ground.

IMPORTANT NOTE FOR GEN 3 3SGTE APPLICATIONS: Pins B2 and B10 are switched on the board at the main ECU connector. To fix, bend pin B2 and extend pin B10 to fit the solder hole for B2. *If you wish to use the factory MAP sensor*, wire it directly to the bent pin – otherwise, you can trim the pin.

3SGTE ECU PINS

JDM SW20 GEN 3 1994/98

E01	#10	#20	RSO	RSC	HT1	EVP1	EGR	G2	NE	IGF	TPC	EVP2
E02	#30	#40	VISC	INT	MTT	IGT	M+	G1	G-	M-		E1

VF	VTA2	Ox1		THW	THA	PIM	VC
FPR	TE 1	TE 2	KNK	IDL	VTA	THAM	E2

STA	AC1	SPD	ATS	RLY	ECO	W	STP	EGW	ELS	BATT	
WINJ	ACT	ABS	CF	CF	THE	CCO	LEV	FC	+B1	+B	

JDM ST205 GEN 3 1994/98

E01	#10	#20	RSO	RSC	HT	EVP1	EGR	G2	NE	IGF	TPC	EVP2
E02	#30	#40	VISC	INT	MTT	IGT	M+	G1	G-	M-		E1

VF	VTA2	OX		THW	THA	PIM	VC
FPR	TE 1	TE 2	KNK	IDL	VTA	THAM	E2

STA	AC1	SP1	ATS	RLY	ECO	W	STP	EGW	ELS	BATT	
WINJ	ACT	ABS	CF	ABV	THE	CCO	LEV	FC	+B1	+B	

JDM SW20 GEN 2 1993

E01	#10	#20	RSO	RSC	HT1	EVP1	EGR	G2	NE	IGF	TPC	TVIS
E02	#30	#40				IGT		G1	G-			E1

VF		OX	PIM	THW	THA	VS	VC
	TE 1	TE 2	KNK	IDL	VTA	THG	E2

STA	AC	SPD	PS	RLY	PSCT	W	STP		ELS	BATT	
							ABS	FC	+B1	+B	

JDM ST1285 GEN 2 1993

E01	#10	#20	RSO	RSC	HT	STJ	EGR	G2	NE	IGF	TPC	TVIS
E02	#30	#40	EVP		NEO	IGT		G1	G-		RLY	E1

VF	VTA2	OX	PIM	THW	THA	VS	VC	
IDL2	TE 1	TE 2	KNK	IDL	VTA	THG	E2	

STA	AC	SPD	PS	RLY	PSCT	W	STP		ELS	BATT	
ACD	ACT	TR1	TR2	VT01	VT02	CCO	ABS	FC	+B1	+B	

USA SW20 GEN 2 1991

E01	#10	#20	STJ	RSC	HT		TPC			IGF	G2	NE
E02	#30	#40	EGR	RSO		IGT		TVIS	FC		G1	E1

VF		OX	KNK	THW	THA 1	VS	VC
G-	T	Ox2	PIM	IDL	VTA		E2

STA	AC1	SPD			FPR	W	STP		ELS	BATT	
	ACT						PS	PSCT	+B1	+B	

A13	…	A1	B8	…	B1	C11	…	C1
A26	…	A14	B16	…	B9	C22	…	C12