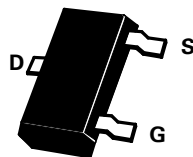


# SOT23 P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ISSUE 3 - JANUARY 1996

## BS250F



SOT23

PARTMARKING DETAIL – MX

### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	$V_{DS}$	-45	V
Continuous Drain Current at $T_{amb}=25^{\circ}C$	$I_D$	-90	mA
Pulsed Drain Current	$I_{DM}$	-1.6	A
Gate Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation at $T_{amb}=25^{\circ}C$	$P_{tot}$	330	mW
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	$^{\circ}C$

### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

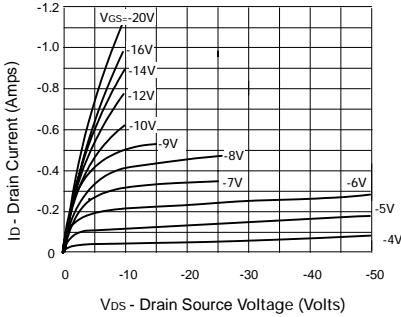
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	$BV_{DSS}$	-45	-70		V	$I_D = -100\mu A, V_{GS} = 0V$
Gate-Source Threshold Voltage	$V_{GS(th)}$	-1		-3.5	V	$I_D = -1mA, V_{DS} = V_{GS}$
Gate-Body Leakage	$I_{GSS}$			-20	nA	$V_{GS} = -15V, V_{DS} = 0V$
Zero Gate Voltage Drain Current	$I_{DSS}$			-0.5	$\mu A$	$V_{DS} = -25V, V_{GS} = 0V$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$		9	14	$\Omega$	$V_{GS} = -10V, I_D = -200mA$
Forward Transconductance (1)(2)	$g_{fs}$		90		mS	$V_{DS} = -10V, I_D = -200mA$
Input Capacitance (2)	$C_{iss}$		25		pF	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$
Turn-On Delay Time (2)(3)	$t_{d(on)}$			10	ns	$V_{DD} \approx -25V, I_D = -200mA$
Rise Time (2)(3)	$t_r$			10	ns	
Turn-Off Delay Time (2)(3)	$t_{d(off)}$			10	ns	
Fall Time (2)(3)	$t_f$			10	ns	

(1) Measured under pulsed conditions. Width=300 $\mu s$ . Duty cycle  $\leq 2\%$  (2) Sample test.

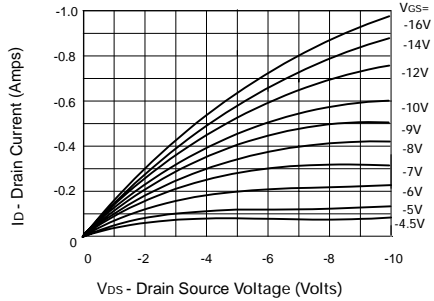
(3) Switching times measured with 50 $\Omega$  source impedance and <5ns rise time on a pulse generator  
Spice parameter data is available upon request for this device

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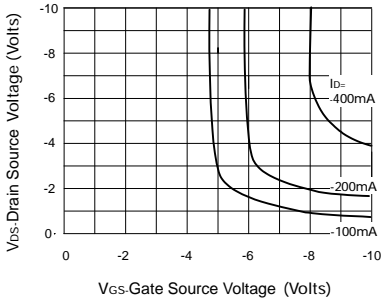
## TYPICAL CHARACTERISTICS



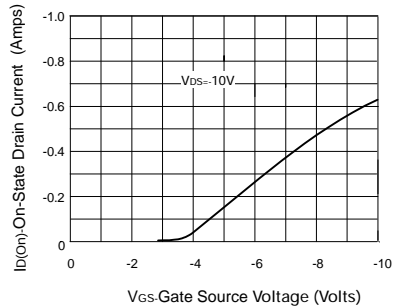
**Output Characteristics**



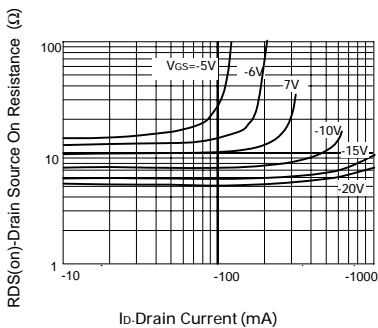
**Saturation Characteristics**



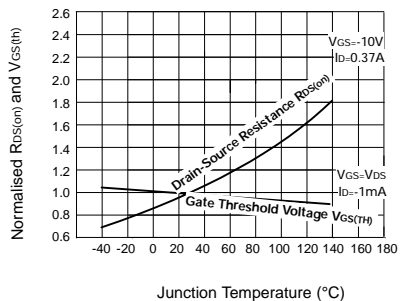
**Voltage Saturation Characteristics**



**Transfer Characteristics**

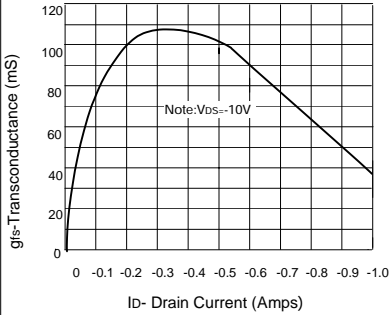


**On-resistance vs Drain Current**

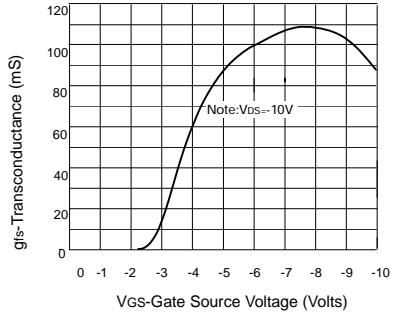


**Normalised  $R_{DS(on)}$  and  $V_{GS(th)}$  vs Temperature**

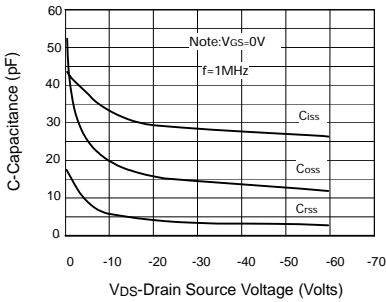
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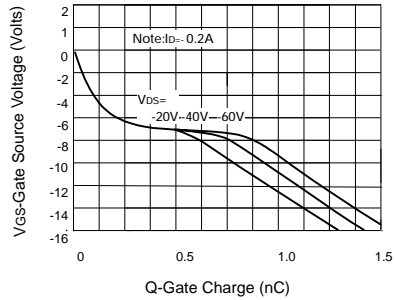
**Transconductance v drain current**



**Transconductance v gate-source voltage**



**Capacitance v drain-source voltage**



**Gate charge v gate-source voltage**