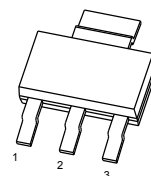


P-Channel Enhancement Mode Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-100V	190mΩ@-10V	-3A
	210mΩ@-4.5V	

SOT-223

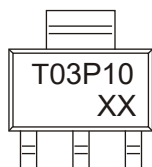


1. GATE
2. DRAIN
3. SOURCE

FEATURE

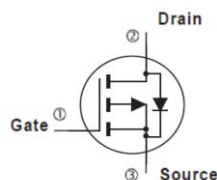
- High density cell design for ultra low $R_{DS(on)}$
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation
- AEC-Q101 qualified (Automotive grade with suffix "Q".)
- Exsemi technology

MARKING



T03P10= Device code
XX= C o d e

EQUIVALENT CIRCUIT



Maximum ratings ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	-3	A
Pulsed Drain Current(note1)	I_{DM}	-10	
Power Dissipation(note3)	P_D	3.1	W
Thermal Resistance from Junction to Ambient(note3)	$R_{\theta JA}$	40	$^{\circ}\text{C}/\text{W}$
Operation Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

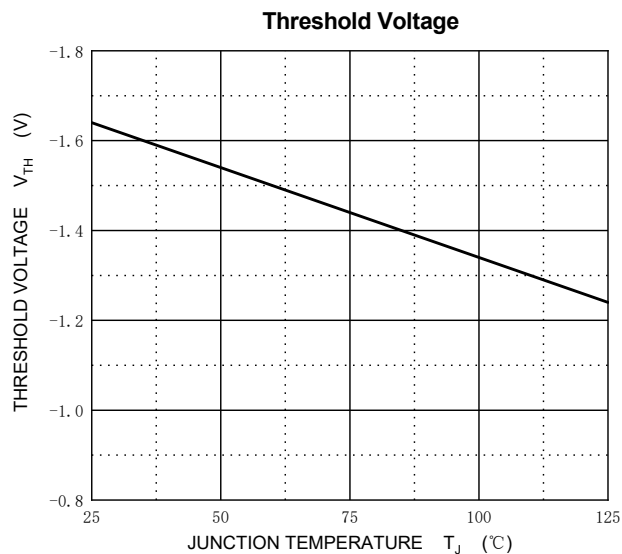
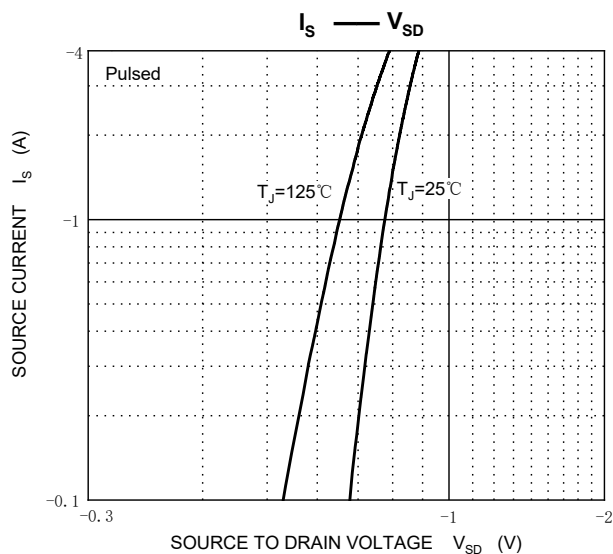
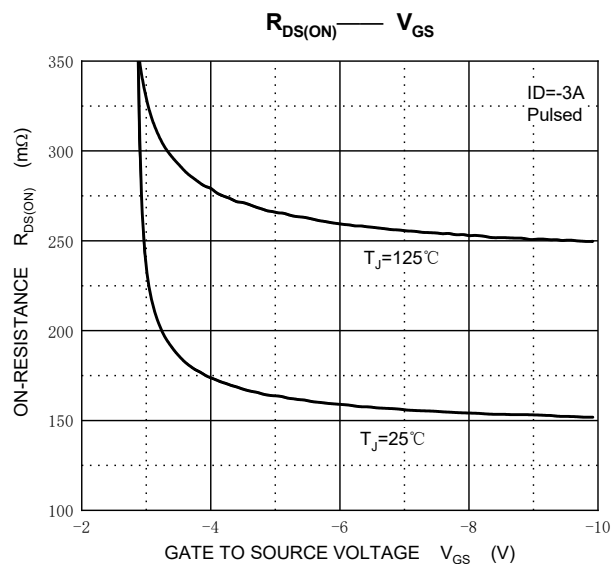
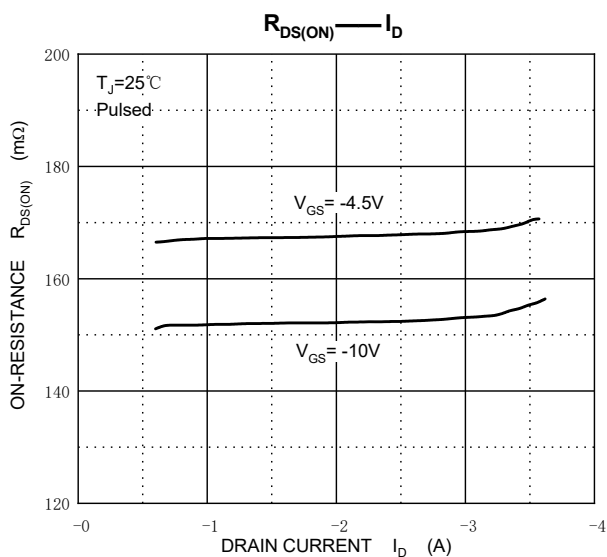
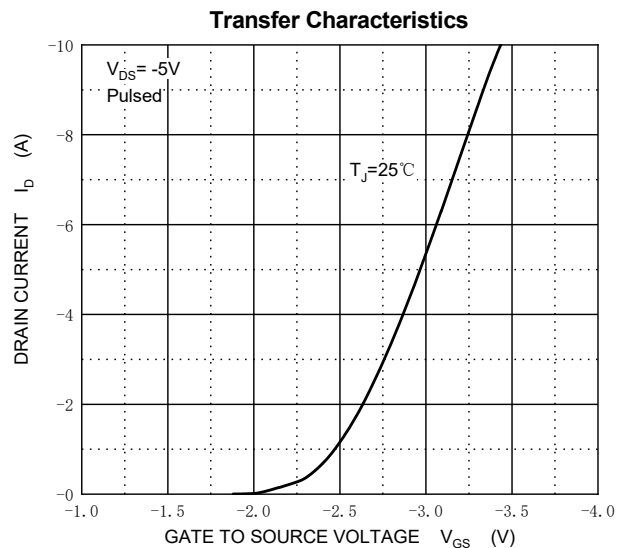
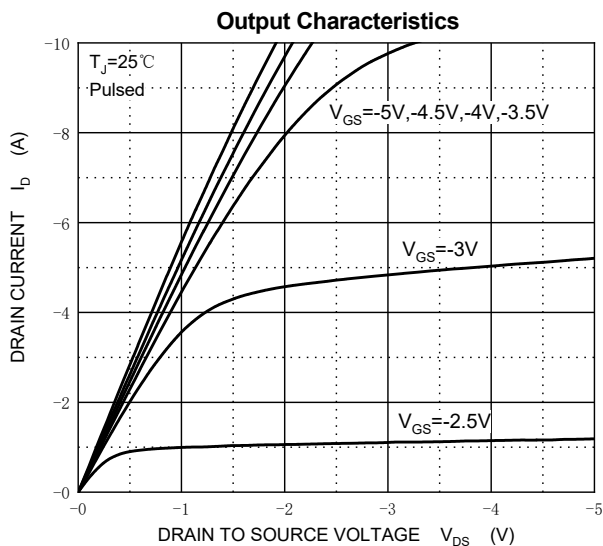
MOSFET ELECTRICAL CHARACTERISTICS $T_a=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-100			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -100V, V_{GS} = 0V, T_J = 25^{\circ}C$			-1	μA
		$V_{DS} = -100V, V_{GS} = 0V, T_J = 125^{\circ}C$			-1	mA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On characteristics						
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -3A$		153	190	m Ω
		$V_{GS} = -4.5V, I_D = -1A$		166	210	m Ω
Forward transconductance	g_{FS}	$V_{DS} = -5V, I_D = -3A$		7		S
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.75	-3	V
Dynamic Characteristics (note 4)						
Input capacitance	C_{iss}	$V_{DS} = -25V, V_{GS} = 0V, f = 1MHz$		1419	2500	pF
Output capacitance	C_{oss}			89	170	pF
Reverse transfer capacitance	C_{rss}			45	90	pF
Gate resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		16		pF
Switching Characteristics (note 4)						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = -10V, V_{DS} = -50V,$ $I_D = -2.6A, R_{GEN} = 25\Omega$ (note 1, 2)		18	36	ns
Turn-on rise time	t_r			8	16	ns
Turn-off delay time	$t_{d(off)}$			100	200	ns
Turn-off fall time	t_f			30	60	ns
Total Gate Charge	Q_g	$V_{DS} = -25V, I_D = -2.6A,$ $V_{GS} = 4.5V$ (note 1, 2)		20	40	nC
Gate-Source Charge	Q_{gs}			3.5	7	nC
Gate-Drain Charge	Q_{gd}			4.6	9	nC
Drain-source diode characteristics and maximum ratings						
Diode forward voltage (note 3)	V_{SD}	$I_S = -1A, V_{GS} = 0V$		-0.75	-1.2	V
Continuous drain-source diode forward current	I_S				-3	A
Pulsed drain-source diode forward current (note 1)	I_{SM}				-10	A

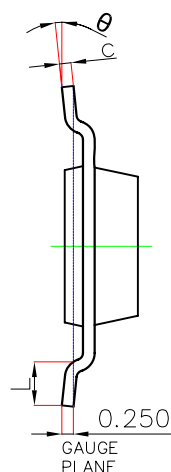
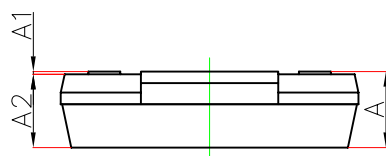
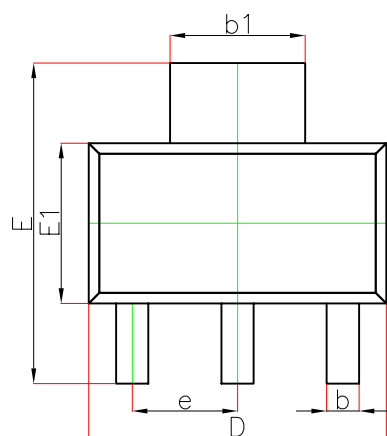
Note :

1. Pulse width < 300 μ s, Duty cycle < 2%.
2. Essentially independent of operating temperature typical characteristics.
3. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch² with 2oz. square pad of copper.
4. Guaranteed by design, not subject to production testing.

Typical Characteristics

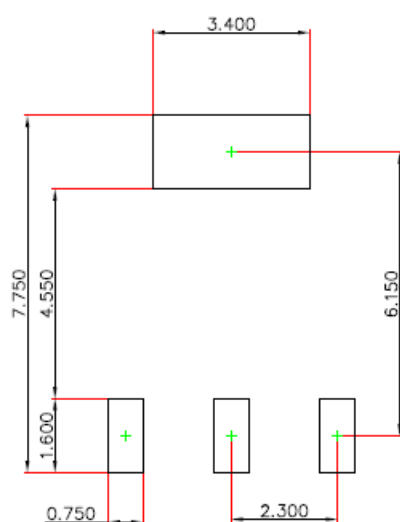


SOT-223 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	—	1.800	—	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	—	0.030	—
θ	0°	10°	0°	10°

SOT-223 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.050\text{mm}$.
3. The pad layout is for reference purposes only.