

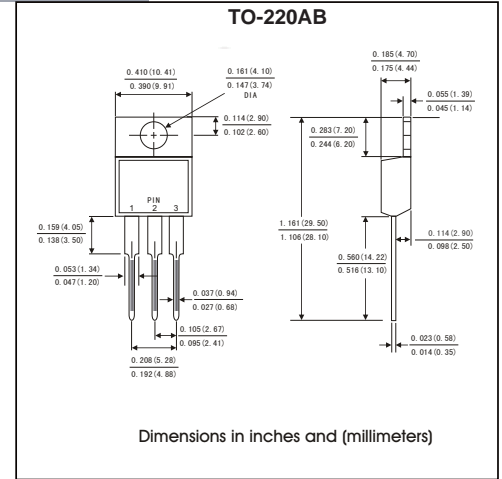
TO-251S Plastic-Encapsulate MOSFETS

Features

- $R_{DS(ON)} = 3.8 @ V_{GS} = 10V$
- Low gate charge (typical 9.0 nC).
- Low C_{rss} (typical 5.0 pF).
- Fast switching capability.
- Avalanche energy specified Improved dv/dt capability.
- N-Channel MOSFET

MECHANICAL DATA

- Case style: TO-220AB molded plastic
- Mounting position: any



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current - Continuous ($T_C = 25^\circ C$)	I_D	2.0	A
Drain Current - Continuous ($T_C = 100^\circ C$)		1.26	A
Drain Current - Pulsed * 1	I_{DP}	8.0	A
Single Pulsed Avalanche Energy * 2	EAS	140	mJ
Avalanche Current * 1	I_{AR}	2.0	A
Repetitive Avalanche Energy * 1	EAR	4.5	mJ
Peak Diode Recovery dv/dt * 3	dv/dt	4.5	V/ns
Power Dissipation ($T_C = 25^\circ C$)	P_D	44	W
Derate above 25°C		0.36	W/°C
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to +150	°C
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	T_L	300	°C
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	54	°C/W

* 1. Repetitive Rating : Pulse width limited by maximum junction temperature.

* 2. $L = 64mH, I_{AS} = 2.0A, V_{DD} = 50V, R_G = 25\Omega$, Starting $T_J = 25^\circ C$

* 3. $I_{SD} \leq 2.4A, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DS}$, Starting $T_J = 25^\circ C$

MOSFET ELECTRICAL CHARACTERISTICS $T_A = 25^\circ C$ unless otherwise specified

Parameter	Symbol	Test conditons	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0V, I_D = 250\mu A$	600			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 600V, V_{GS} = 0V$			10	μA
		$V_{DS} = 480V, T_C = 125^\circ C$			100	μA
Gate-Body Leakage Current, Forward	I_{GSSF}	$V_{GS} = 30V, V_{DS} = 0V$			100	nA
Gate-Body Leakage Current, Reverse	I_{GSSR}	$V_{GS} = -30V, V_{DS} = 0V$			-100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 1A$		3.8	5.0	Ω
Forward Transconductance	g_{FS}	$V_{DS} = 50V, I_D = 1A$ * 1		2.25		S
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz$		270	350	pF
Output Capacitance	C_{oss}		40	50	pF	
Reverse Transfer Capacitance	C_{rss}		5	7	pF	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 300V, I_D = 2.4A, R_G = 25\Omega$ *1,2		10	30	ns
Turn-On Rise Time	t_r		25	60	ns	
Turn-Off Delay Time	$t_{d(off)}$		20	50	ns	
Turn-Off Fall Time	t_f		25	60	ns	
Total Gate Charge	Q_g	$V_{DS} = 480V, I_D = 2.4A, V_{GS} = 10V$ *1,2		9	11	nC
Gate-Source Charge	Q_{gs}		1.6		nC	
Gate-Drain Charge	Q_{gd}		4.3		nC	
Maximum Continuous Drain-Source Diode Forward Current	I_S				2	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				8	A
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 2.0A$			1.4	V
Reverse Recovery Time	t_{rr}	$V_{GS} = 0V, I_S = 2.4A,$ $dI_F / dt = 100A/\mu s$ * 1		180		ns
Reverse Recovery Charge	Q_{rr}			0.72		μC

* 1. Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$

* 2. Essentially independent of operating temperature.