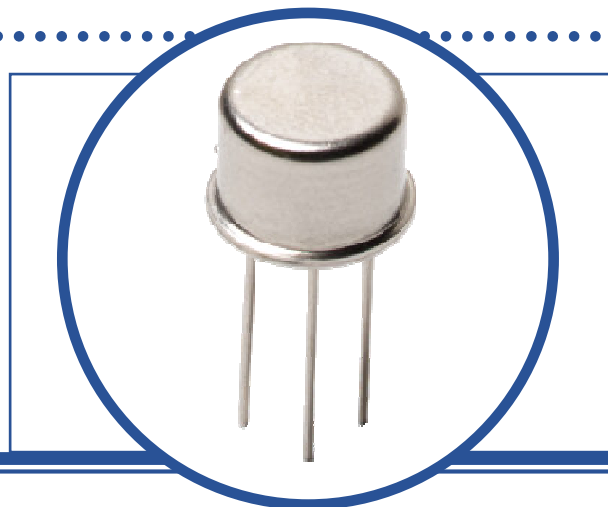


P-CHANNEL POWER MOSFET

2N6851

- Hermetic TO39 Metal Package
- Dynamic dv/dt Rating
- Simple Drive Requirements
- Screening Options Available



ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

V_{DS}	Drain – Source Voltage	-200V
V_{GS}	Gate – Source Voltage	$\pm 20V$
I_D	Continuous Drain Current @ $T_{case} = 25^{\circ}C$	-4.0A
I_D	Continuous Drain Current @ $T_{case} = 100^{\circ}C$	-2.4A
$I_{DM}^{(1)}$	Pulsed Drain Current	-16A
P_D	Total Power Dissipation @ $T_{case} = 25^{\circ}C$	25W
	Linear De-rating Factor @ $T_{case} \geq 25^{\circ}C$	200mW/ $^{\circ}C$
$dv/dt^{(2)}$	Peak Diode Recovery dv/dt	-5V/ns
T_J	Operating Temperature Range	-55 $^{\circ}C$ to +150 $^{\circ}C$
T_{stg}	Storage Temperature Range	-55 $^{\circ}C$ to +150 $^{\circ}C$

THERMAL CHARACTERISTICS

Symbol	Parameters	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case	5	$^{\circ}C/W$

Notes:

- 1) Repetitive Rating; Pulse width limited by maximum junction temperature
- 2) $I_{SD} \leq -4.0A$, $di/dt \leq -120A/\mu s$, $V_{DD} \leq -200V$, $T_J \leq 150^{\circ}C$
- 3) Pulse width $\leq 380 \mu s$; Duty Cycle $\leq 2\%$
- 4) By design. Not a production test.

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0$ $I_D = -1.0mA$	-200			V
$\frac{\Delta BV_{DSS}}{\Delta T_j}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^{\circ}C$ $I_D = -1.0mA$		-0.22		$V/^{\circ}C$
$R_{DS(on)}^{(3)}$	Static Drain-Source On-State Resistance	$V_{GS} = -10V$ $I_D = -2.4A$			0.80	Ω
		$V_{GS} = -10V$ $I_D = -4.0A$			0.83	
		$T_j = 125^{\circ}C$			1.60	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} \geq V_{GS}$ $I_D = -250\mu A$	-2.0		-4.0	V
		$T_j = 125^{\circ}C$	-1.0			
		$T_j = -55^{\circ}C$			-5.0	
$g_{fs}^{(3)}$	Forward Transconductance	$V_{DS} \geq -15V$ $I_{DS} = -2.4A$	2.2			S(O)
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0$ $V_{DS} = 0.8BV_{DSS}$			-25	μA
		$T_j = 125^{\circ}C$			-250	
I_{GSS}	Gate-Source Leakage	$V_{GS} = \pm 20V$			± 100	nA
I_{GSS}		$T_j = 125^{\circ}C$			± 200	

DYNAMIC CHARACTERISTICS

C_{iss}	Input Capacitance	$V_{GS} = 0$		700		pF
C_{oss}	Output Capacitance	$V_{DS} = -25V$		200		
C_{rss}	Reverse Transfer Capacitance	$f = 1.0MHz$		40		
$Q_g^{(4)}$	Total Gate Charge	$V_{GS} = -10V$	14.7		34.8	nC
$Q_{gs}^{(4)}$	Gate-Source Charge	$I_D = -4.0A$	0.8		7.0	
$Q_{gd}^{(4)}$	Gate-Drain Charge	$V_{DS} = 0.5BV_{DSS}$	5.0		17	
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = -100V$		50		ns
t_r	Rise Time	$I_D = -4.0A$		100		
$t_{d(off)}$	Turn-Off Delay Time	$R_G = 7.5\Omega$		100		
t_f	Fall Time	$V_{GS} = -10V$		80		

SOURCE – DRAIN DIODE CHARACTERISTICS

I_S	Continuous Source Current				-4.0	A
I_{SM}	Pulse Source Current				-16	
$V_{SD}^{(3)}$	Diode Forward Voltage	$I_S = -4.0A$ $V_{GS} = 0$			-6.0	V
$t_{rr}^{(3)}$	Reverse Recovery Time	$I_F = -4.0A$ $V_{DD} \leq -50V$			400	ns
$Q_{rr}^{(3/4)}$	Reverse Recovery Charge	$di/dt \leq -100A/\mu s$			4.0	μC
t_{on}	Forward Turn - on Time		Negligible			

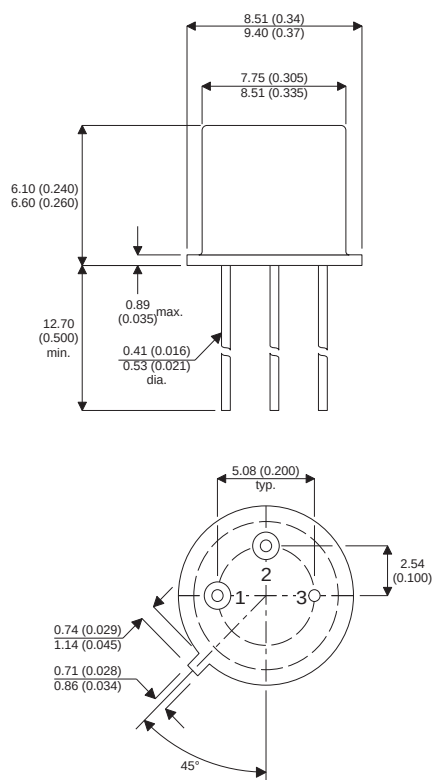
PACKAGE CHARACTERISTICS

L_D	Internal Drain Inductance		5.0		nH
L_S	Internal Source Inductance		15		

P-CHANNEL POWER MOSFET 2N6851

MECHANICAL DATA

Dimensions in mm (inches)



TO-39 (TO-205AD) METAL PACKAGE Underside View

Pin 1 - Source

Pin 2 - Gate

Pin 3 - Drain