

**-30V,-4.2A
P-Channel Mosfet**

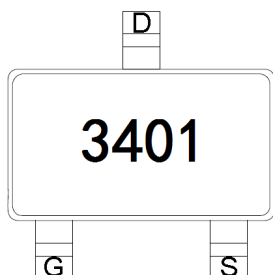
FEATURES

- $R_{DS(ON)} \leq 55m\Omega$ @ $V_{GS} = -10V$
- $R_{DS(ON)} \leq 68m\Omega$ @ $V_{GS} = -4.5V$
- $R_{DS(ON)} \leq 96m\Omega$ @ $V_{GS} = -2.5V$

APPLICATIONS

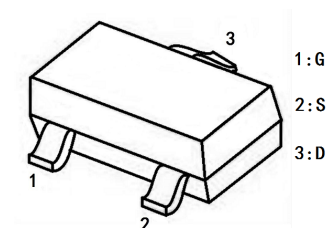
- PWM Applications
- Load Switch
- Power Management

MARKING

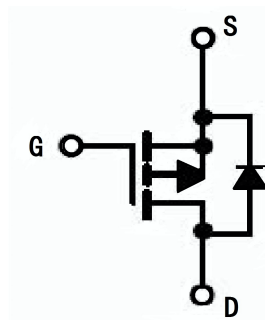


Other marks: "R1" or "A19T"

SOT-23



P-CHANNEL MOSFET



Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise specified)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	-30	V
V_{GSS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current	$T_A = 25^\circ C$	-4.2
		$T_A = 100^\circ C$	-2.7
I_{DM}	Pulsed Drain Current ^{note1}	-30	A
P_D	Power Dissipation	$T_A = 25^\circ C$	1.5
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	83	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D = -250\mu A$	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -30V, V_{GS} = 0V,$	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 12V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.6	-0.9	-1.3	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note2</small>	$V_{GS} = -10V, I_D = -4A$	-	45	55	m Ω
		$V_{GS} = -4.5V, I_D = -3A$	-	53	68	
		$V_{GS} = -2.5V, I_D = -1A$	-	72	96	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1.0MHz$	-	880	-	pF
C_{oss}	Output Capacitance		-	105	-	pF
C_{rss}	Reverse Transfer Capacitance		-	65	-	pF
Q_g	Total Gate Charge	$V_{DS} = -15V, I_D = -4.2A,$ $V_{GS} = -10V$	-	8.5	-	nC
Q_{gs}	Gate-Source Charge		-	1.8	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	2.7	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = -15V, I_D = -1A,$ $V_{GS} = -10V, R_{GEN} = 2.5\Omega$	-	7	-	ns
t_r	Turn-on Rise Time		-	3	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	20	-	ns
t_f	Turn-off Fall Time		-	12	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-4.2	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-30	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = -4.2A$	-	-0.8	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

P-Channel -30V (D-S) MOSFET Typical Characteristics

Figure 1: Output Characteristics

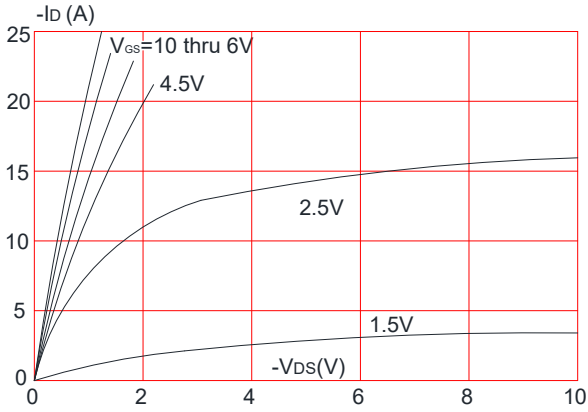


Figure 2: Typical Transfer Characteristics

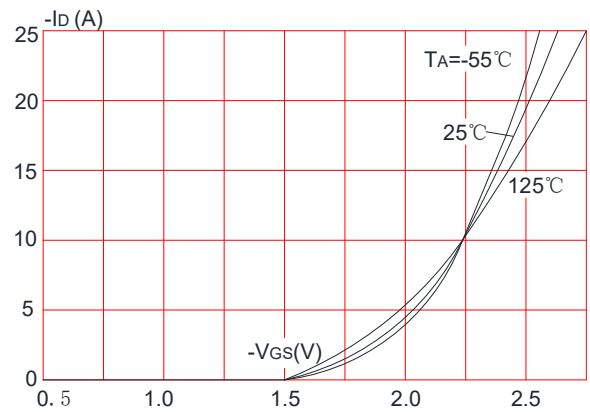


Figure 3: On-resistance vs. Drain Current

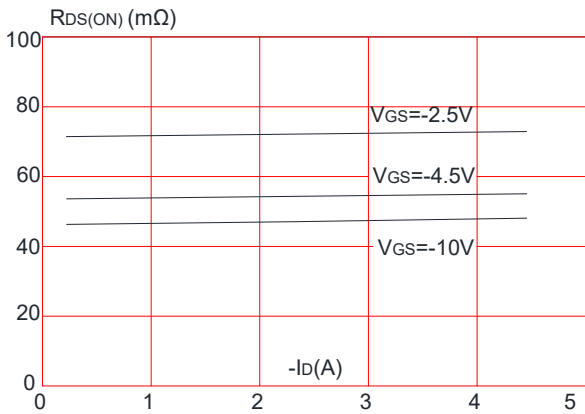


Figure 4: Body Diode Characteristics

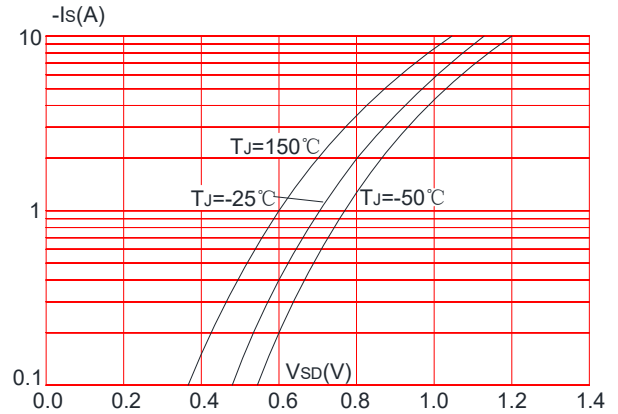


Figure 5: Gate Charge Characteristics

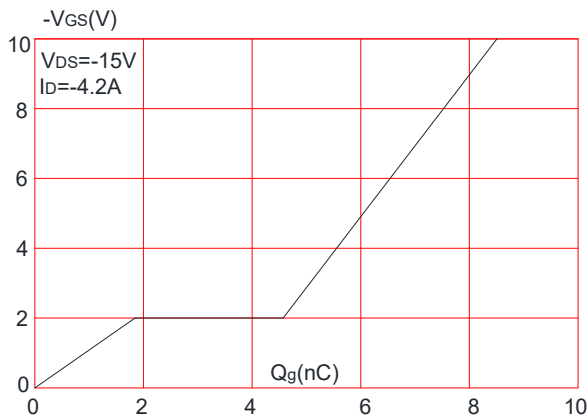


Figure 6: Capacitance Characteristics

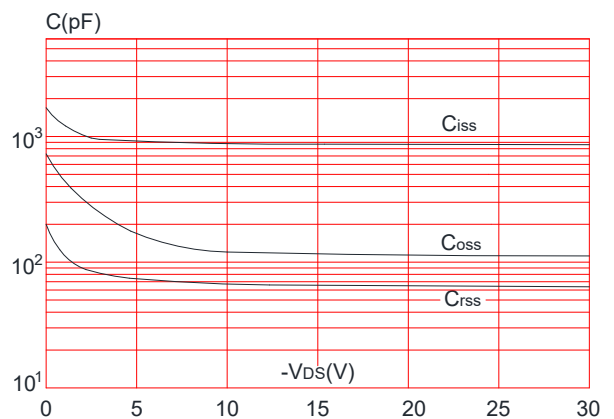


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

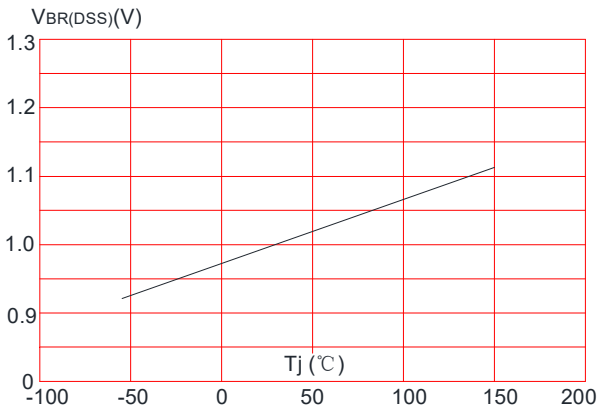


Figure 8: Normalized on Resistance vs. Junction Temperature

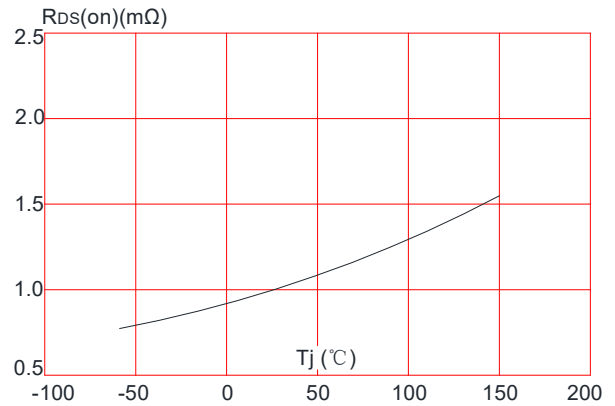


Figure 9: Maximum Safe Operating Area

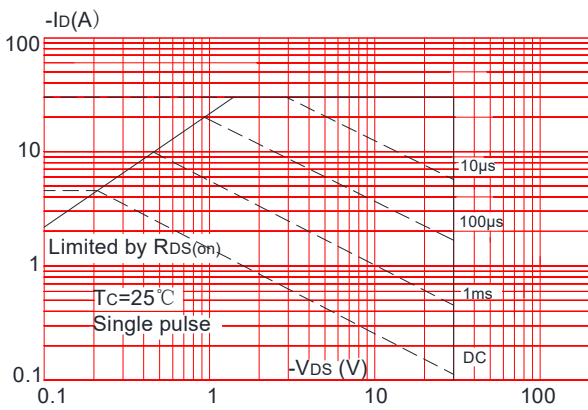


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

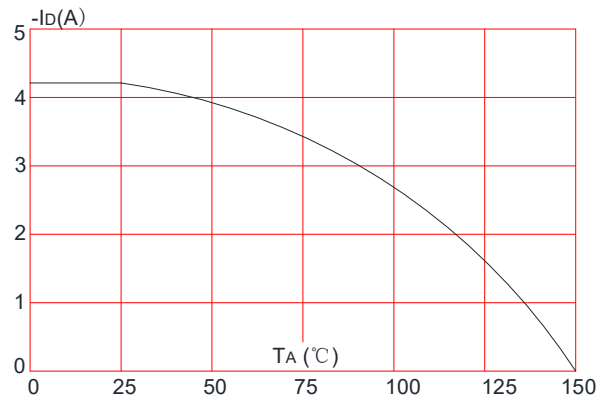
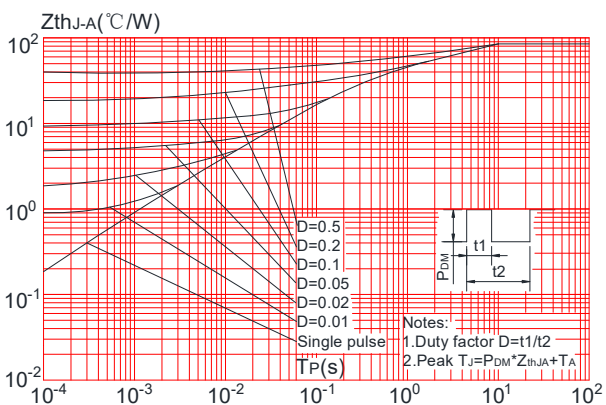
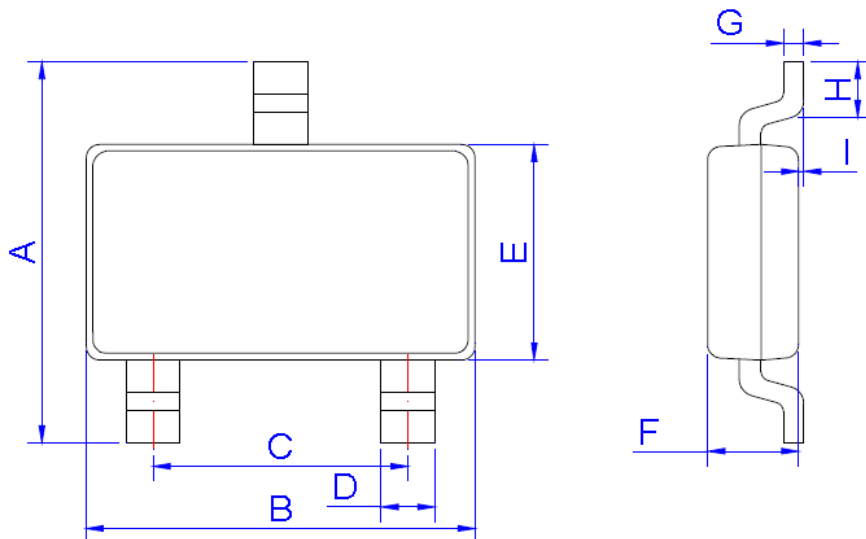


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Package Mechanical Data



SOT-23

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.30	2.40	2.50	0.091	0.095	0.098
B	2.80	2.90	3.00	0.110	0.114	0.118
C	1.90 REF			0.075 REF		
D	0.35	0.40	0.45	0.014	0.016	0.018
E	1.20	1.30	1.40	0.047	0.051	0.055
F	0.90	1.00	1.10	0.035	0.039	0.043
G		0.10	0.15		0.004	0.006
H	0.20			0.008		
I	0		0.10	0		0.004