

-20V P-Channel Mosfet

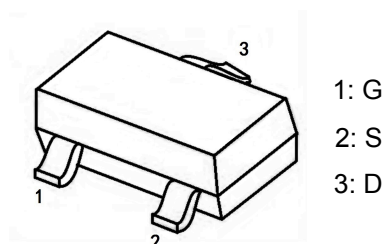
FEATURES

- $R_{DS(ON)} \leq 41m\Omega$ (29m Ω Typ.)
@ $V_{GS}=-4.5V$
- $R_{DS(ON)} \leq 55m\Omega$ (40m Ω Typ.)
@ $V_{GS}=-2.5V$

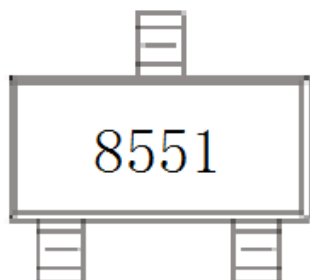
APPLICATIONS

- PWM Applications
- Load Switch
- Power Management

SOT-23

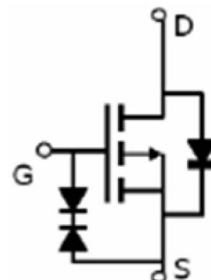


MARKING



8551 : Device Code

P-CHANNEL MOSFET



MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	-20	V
V_{GSS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current	-6	A
I_{DM}	Pulsed Drain Current	-24	A
P_D	Power Dissipation	0.35	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357	$^{\circ}C/W$
T_J	Junction Temperature	150	$^{\circ}C$
T_{STG}	Storage Temperature	-55~ +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 = -250μA	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -20V, V _{GS} = 0V,	-	-	-1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±8V	-	±0.55	±10	uA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.44	-1	V
R _{DS(on)}	Static Drain-Source on-Resistance ^{note1}	V _{GS} =-4.5V, I _D =-4A	-	29	41	mΩ
		V _{GS} =-2.5V, I _D =-3A	-	40	55	
gfs	Forward transconductance ^{note1}	V _{DS} =-5V, I _D =-4A	-	10	-	S
Dynamic Characteristics ^{note2}						
C _{iss}	Input Capacitance	V _{DS} = -10V, V _{GS} = 0V, f = 1.0MHz	-	1175	-	pF
C _{oss}	Output Capacitance		-	166	-	pF
C _{rss}	Reverse Transfer Capacitance		-	129	-	pF
Q _g	Total Gate Charge	V _{DS} = -10V, I _D = -4A, V _{GS} = -4.5V	-	13	-	nC
Q _{gs}	Gate-Source Charge		-	1.4	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	3.6	-	nC
Switching Characteristics ^{note2}						
t _{d(on)}	Turn-on Delay Time	V _{DD} = -10V, R _L =2.5Ω V _{GS} =-4.5V, R _{GEN} =3Ω	-	9	-	ns
t _r	Turn-on Rise Time		-	15	-	ns
t _{d(off)}	Turn-off Delay Time		-	50	-	ns
t _f	Turn-off Fall Time		-	30	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-6	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-24	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = -4A	-	-0.8	-1.2	V

Notes:1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

2. Guaranteed by design, not subject to production testing

TYPICAL PERFORMANCE CHARACTERISTICS

Figure1: Output Characteristics

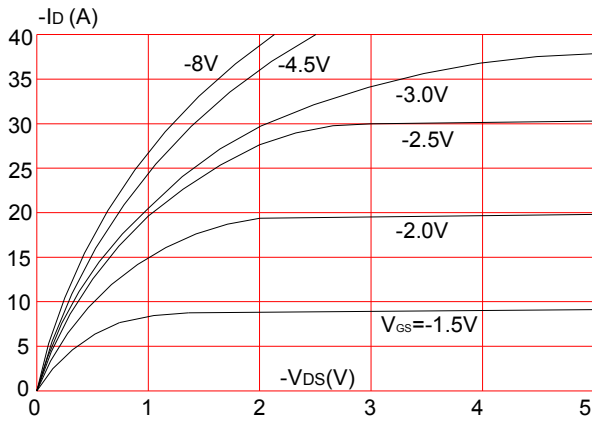


Figure 2: Typical Transfer Characteristics

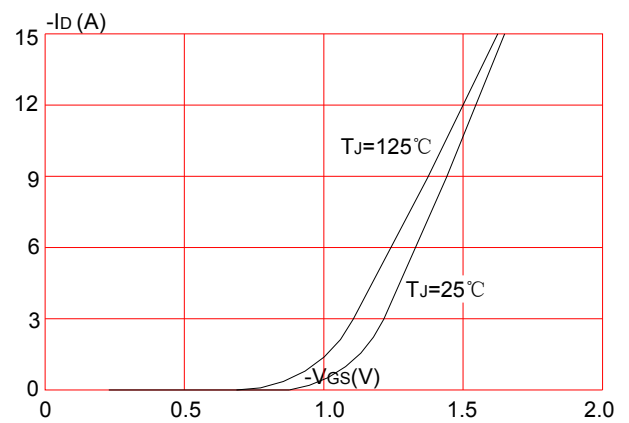


Figure 3: On-resistance vs. Drain Current

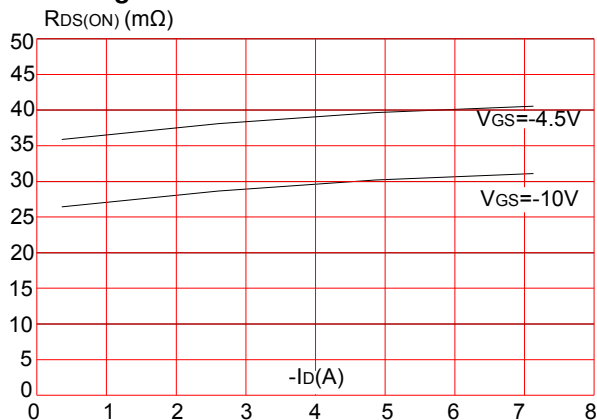


Figure 4: Body Diode Characteristics

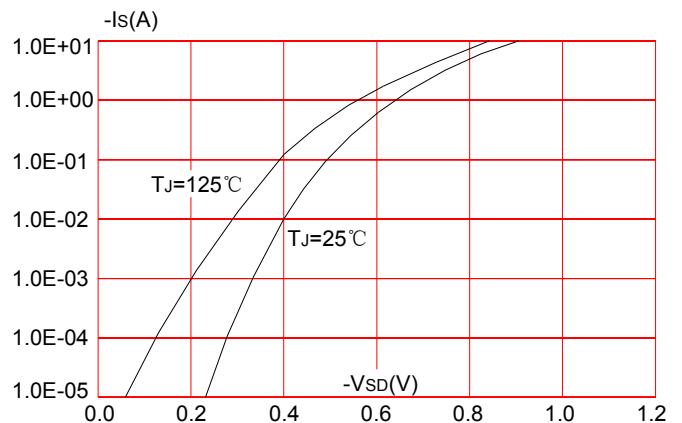


Figure 5: Gate Charge Characteristics

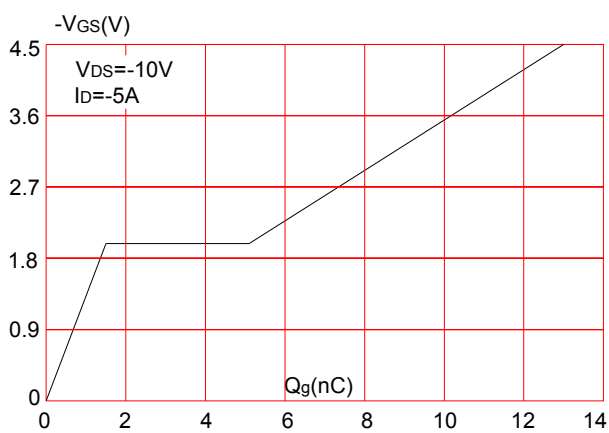
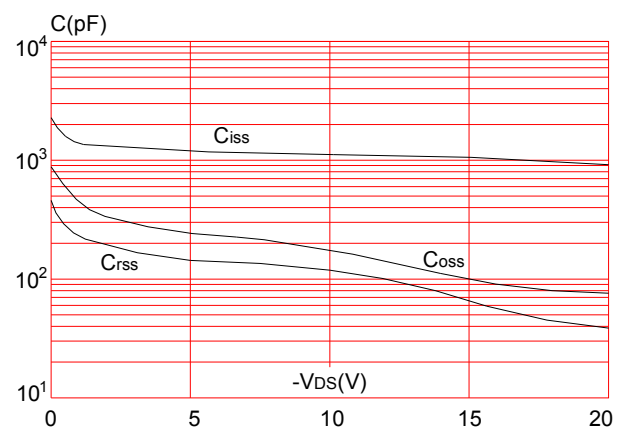


Figure 6: Capacitance Characteristics



TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

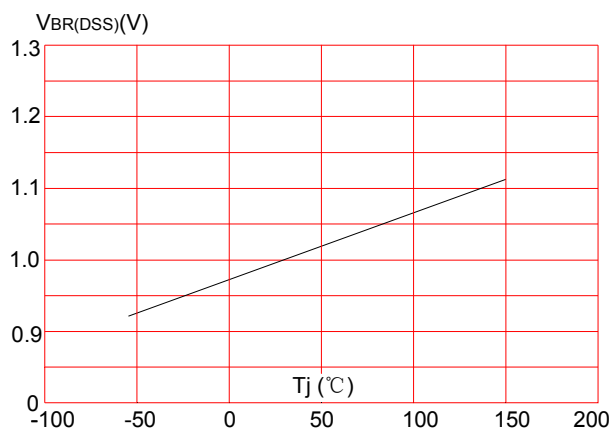


Figure 8: Normalized on Resistance vs. Junction Temperature

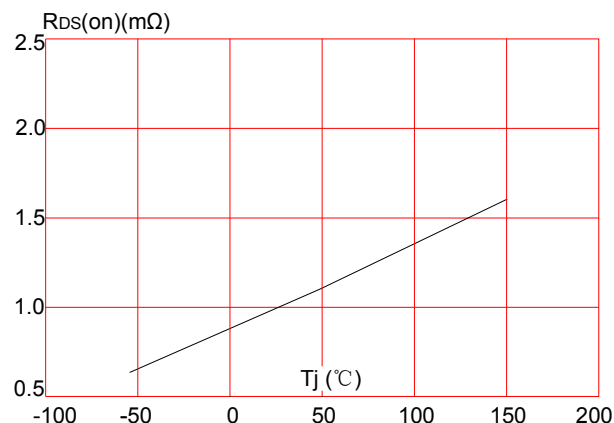


Figure 9: Maximum Safe Operating Area

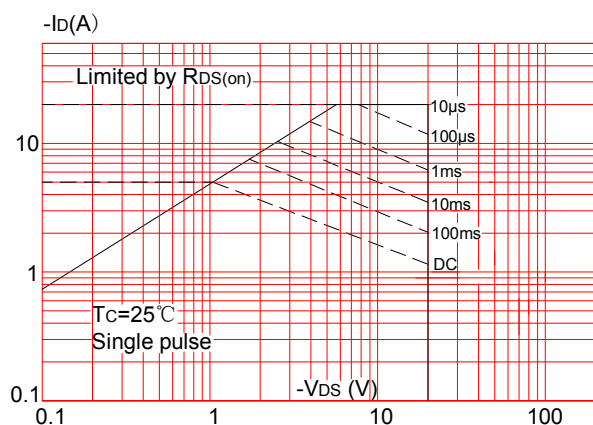


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

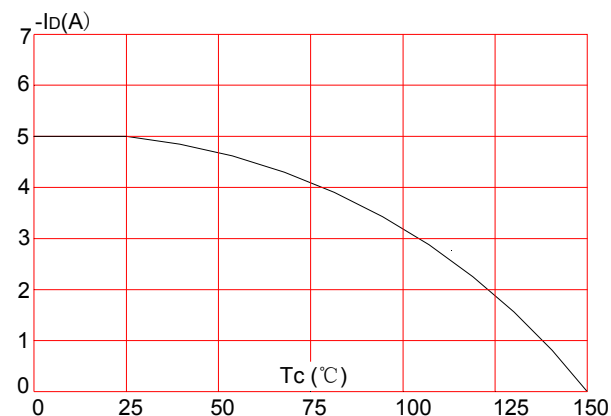
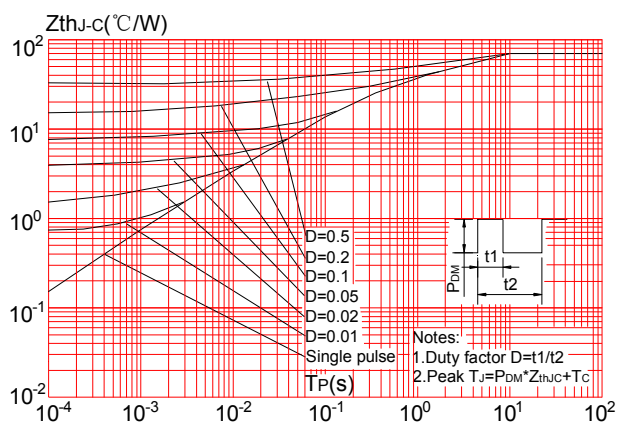
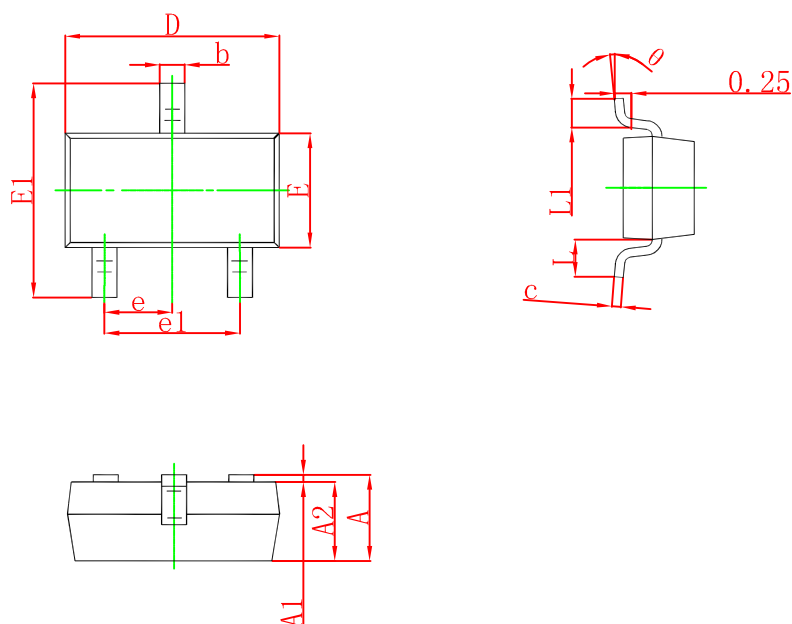


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient (SOT-23)



SOT-23 PACKAGE OUTLINE DRAWING



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°