

-60V P-Channel Mosfet

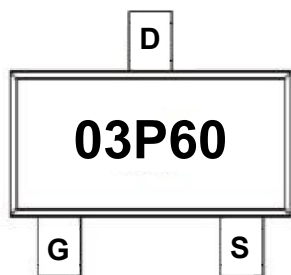
FEATURES

- $R_{DS(ON)} \leq 185m\Omega$ (163m Ω Typ.)
@ $V_{GS} = -10V$
- $R_{DS(ON)} \leq 215m\Omega$ (182m Ω Typ.)
@ $V_{GS} = -4.5V$

APPLICATIONS

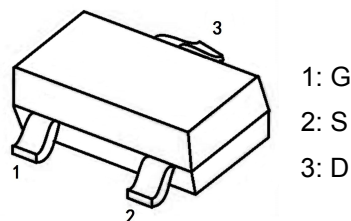
- Battery management
- Load Switch Portable
- Appliances

MARKING

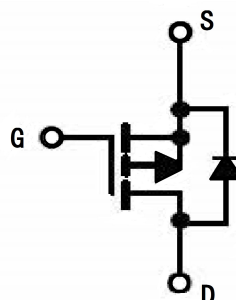


03P60 : Device Code

SOT-23



P-CHANNEL MOSFET



MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	-60	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current @ $V_{GS}=10V$ ^{note1}	-1.9	A
I_{DM}	Pulsed Drain Current ^{note2}	- 7.6	A
P_D	Power Dissipation	1.0	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	125	°C/W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C

MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °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	-60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -60V,V _{GS} = 0V	-	-	-1	μA
I _{GSS}	Gate to Body Leakage Current	V _{GS} = ±20V,V _{DS} = 0V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D = -250μA	-1.0	-1.7	-2.5	V
R _{DS(on)}	Static Drain-Source On-Resistance ^{note3}	V _{GS} =-10V, I _D =-2A	-	163	185	mΩ
		V _{GS} =-4.5V, I _D =-1.5A	-	182	215	
Dynamic Characteristics ^{note4}						
C _{iss}	Input Capacitance	V _{DS} =-30V, V _{GS} = 0V f = 1.0MHz	-	475	-	pF
C _{oss}	Output Capacitance		-	23	-	pF
C _{rss}	Reverse Transfer Capacitance		-	18	-	pF
Q _g	Total Gate Charge	V _{DS} =-30V, I _D =-2A, V _{GS} =-10V	-	8.5	-	nC
Q _{gs}	Gate-Source Charge		-	1.5	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	1.3	-	nC
Switching Characteristics ^{note4}						
t _{d(on)}	Turn-On Delay Time	V _{GS} = -10V,V _{DS} =-30V R _G =3Ω, I _D =-2A	-	5.1	-	ns
t _r	Turn-On Rise Time		-	18	-	ns
t _{d(off)}	Turn-Off Delay Time		-	34	-	ns
t _f	Turn-Off Fall Time		-	10	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S =-2A	-	-	-1.2	V

Notes: 1. $T_C = 25^\circ C$ Limited only by maximum temperature allowed. Calculated continuous current based on maximum allowable junction temperature.

2. $PW \leq 10\mu s$, Duty cycle $\leq 1\%$

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

4. Guaranteed by design, not subject to production testing

TYPICAL PERFORMANCE CHARACTERISTICS

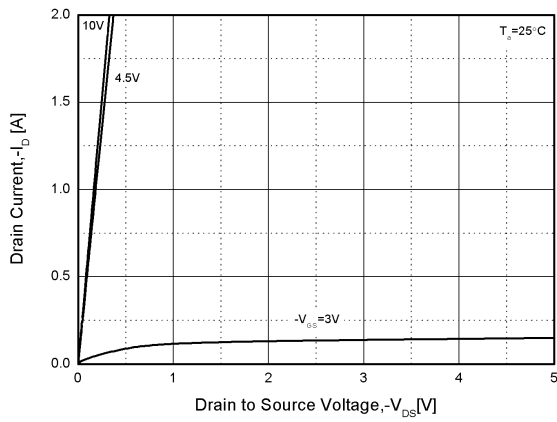


Figure1. Output Characteristics

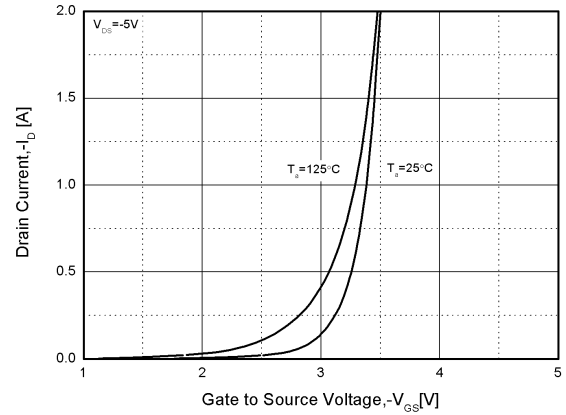


Figure2. Transfer Characteristics

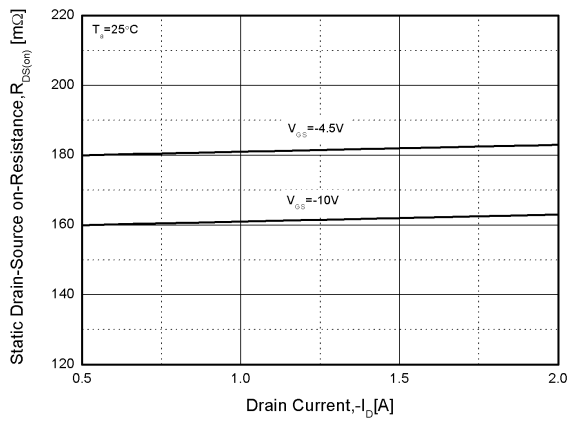


Figure3. Rdson-Drain Current

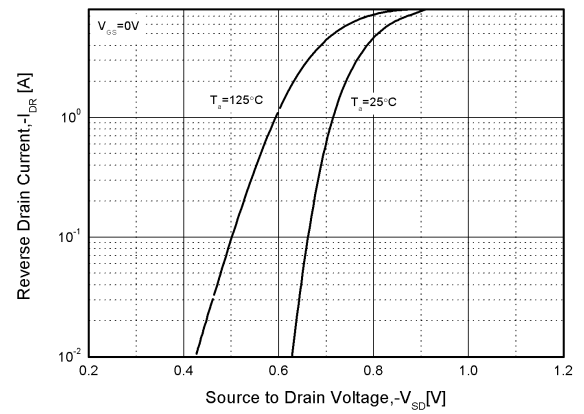


Figure4. Typical Source-Drain Diode Forward Voltage

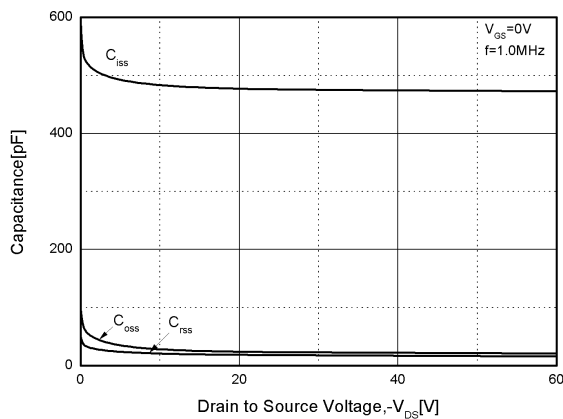


Figure5. Capacitance Characteristics

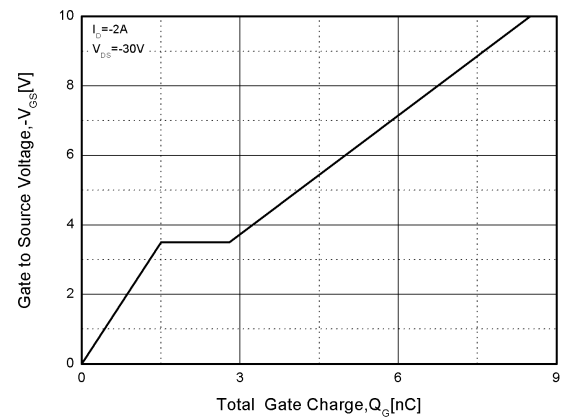


Figure6. Gate Charge

TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

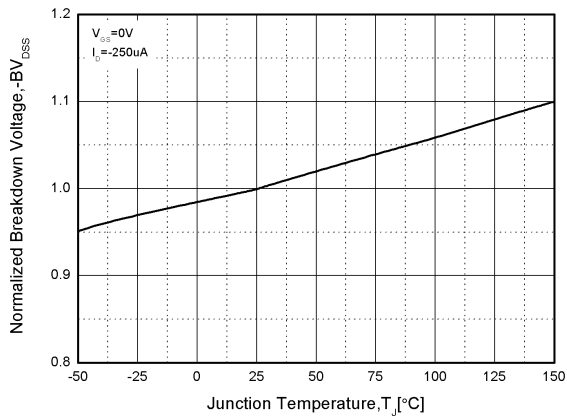


Figure7. Normalized Breakdown Voltage vs. Temperature

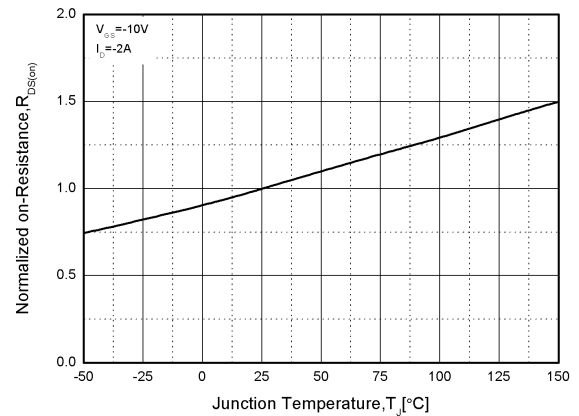


Figure8. Normalized on Resistance vs. Temperature

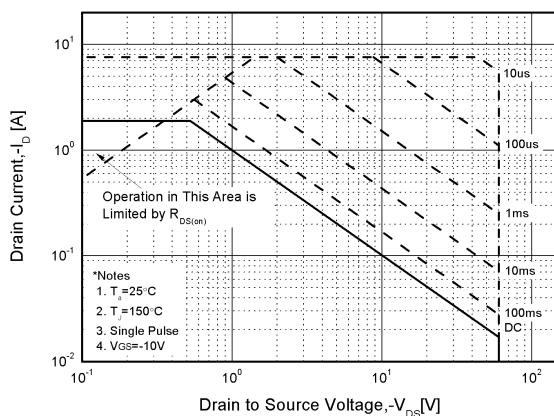


Figure9. Safe Operation Area

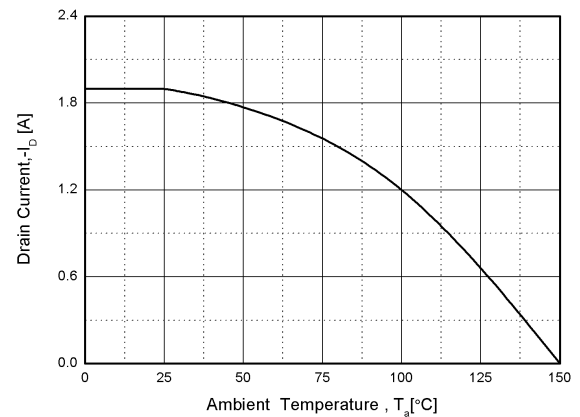


Figure10. Maximum Drain Current vs. Ambient Temperature

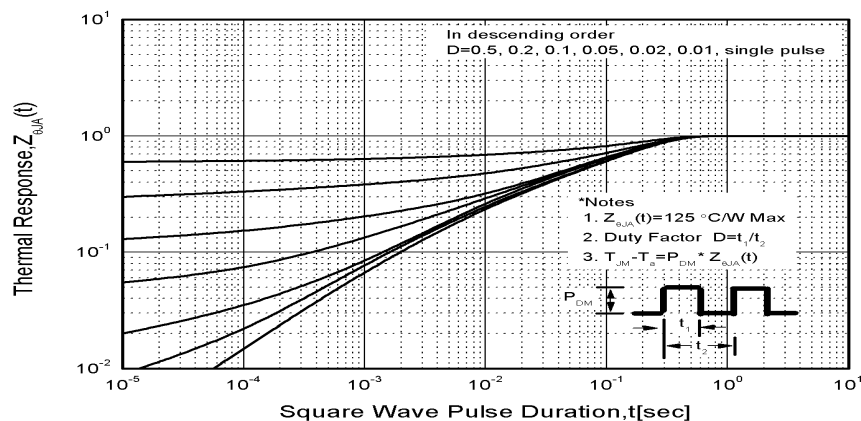
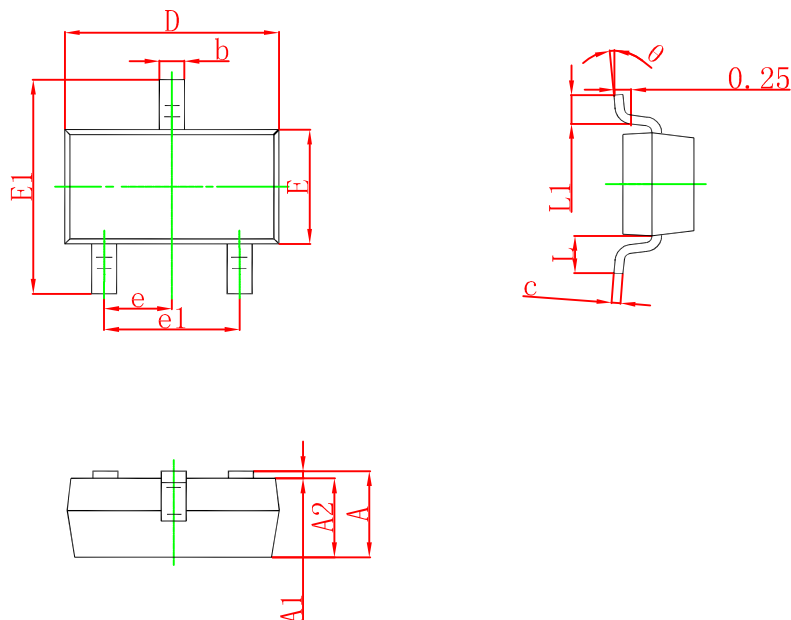


Figure11. Transient Thermal Response Curve

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°