

-30V P-Channel Mosfet

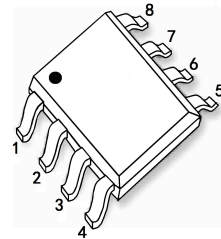
FEATURES

- $R_{DS(ON)} \leq 9m\Omega$ (7m Ω Typ.)
@ $V_{GS} = -10V$
- $R_{DS(ON)} \leq 14m\Omega$ (10m Ω Typ.)
@ $V_{GS} = -4.5V$

APPLICATIONS

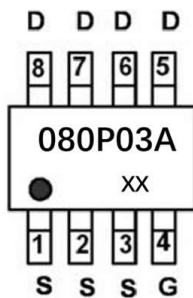
- PWM Applications
- Load Switch
- Power Management

SOP-8



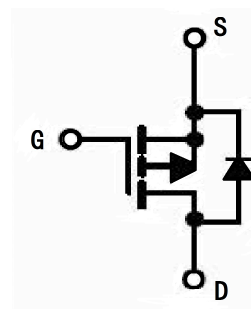
1: S 3: S 5: D 7: D
2: S 4: G 6: D 8: D

MARKING



XX: Date Code

P-CHANNEL MOSFET



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

Symbol	Parameter	Max.	Units	
V_{DSS}	Drain-Source Voltage	-30	V	
V_{GSS}	Gate-Source Voltage	± 20	V	
I_D	Continuous Drain Current	$T_a = 25^\circ C$	-15	A
		$T_a = 100^\circ C$	-10	A
I_{DM}	Pulsed Drain Current ^{note1}	-60	A	
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	105	mJ	
P_D	Power Dissipation	3	W	
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	42.6	$^\circ C/W$	
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$	

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	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V,$	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=-10V, I_D=-30A$	-	7	9	m Ω
		$V_{GS}=-4.5V, I_D=-20A$	-	10	14	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=-15V,$ $V_{GS}=0V, f=1.0MHz$	-	4320	-	pF
C_{oss}	Output Capacitance		-	534	-	pF
C_{rss}	Reverse Transfer Capacitance		-	493	-	pF
Q_g	Total Gate Charge	$V_{DS}=-15V, I_D=-15A$ $V_{GS}=-10V$	-	45	-	nC
Q_{gs}	Gate-Source Charge		-	8	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	12	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=-15V, I_D=-15A,$ $V_{GS}=-10V,$ $R_{GEN}=2.5\Omega$	-	19	-	ns
t_r	Turn-on Rise Time		-	15	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	65	-	ns
t_f	Turn-off Fall Time		-	36	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-15	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-60	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=-20A$	-	-0.8	-1.2	V

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

2. EAS condition: $T_J=25^\circ C, V_{DD}=-15V, V_G=-10V, R_G=25\Omega, L=0.5mH, I_{AS}=-20.5A$

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

TYPICAL PERFORMANCE CHARACTERISTICS

Figure 1: Output Characteristics

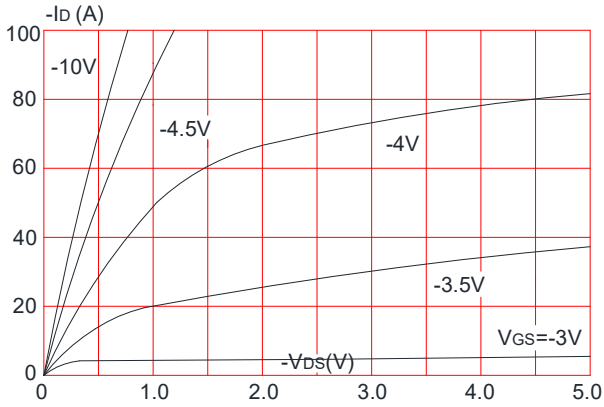


Figure 2: Typical Transfer Characteristics

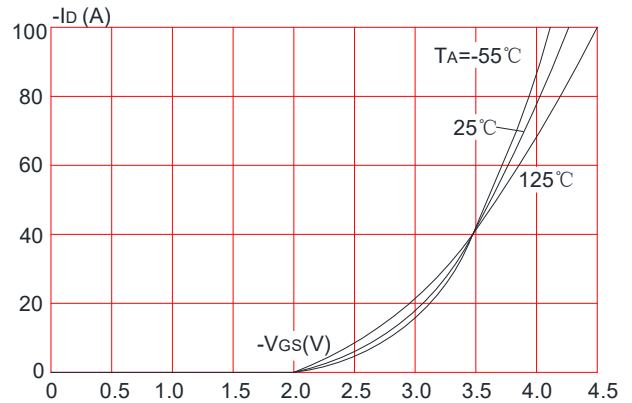


Figure 3: On-resistance vs. Drain Current

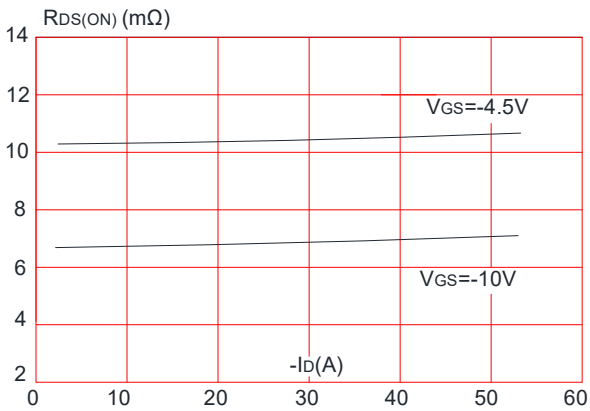


Figure 4: Body Diode Characteristics

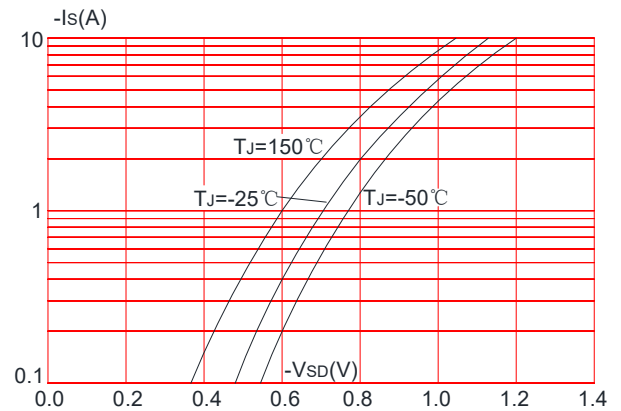


Figure 5: Gate Charge Characteristics

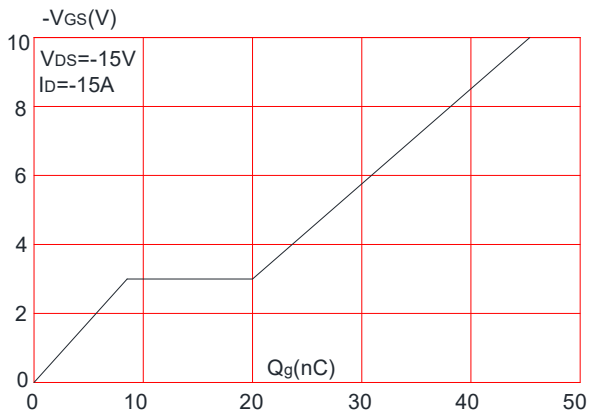
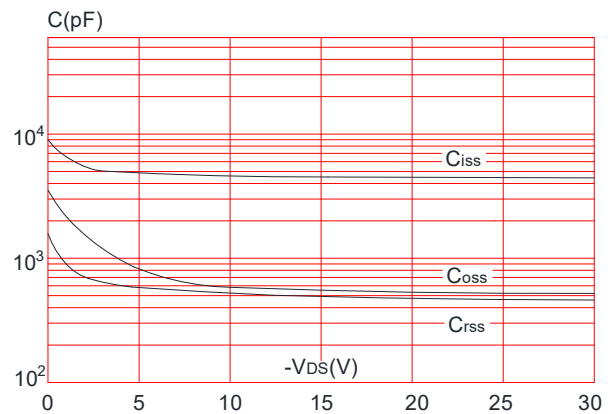


Figure 6: Capacitance Characteristics



TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

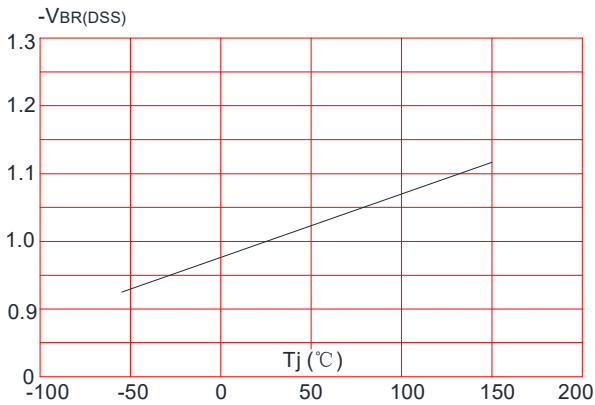


Figure 8: Normalized on Resistance vs. Junction Temperature

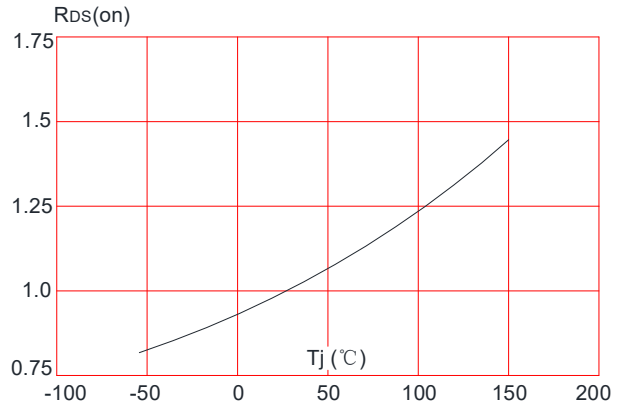


Figure 9: Maximum Safe Operating Area

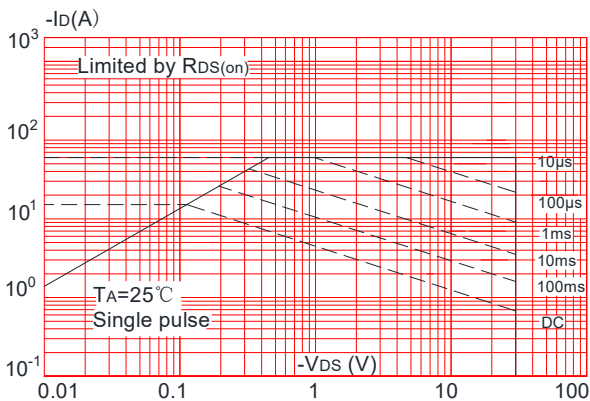


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

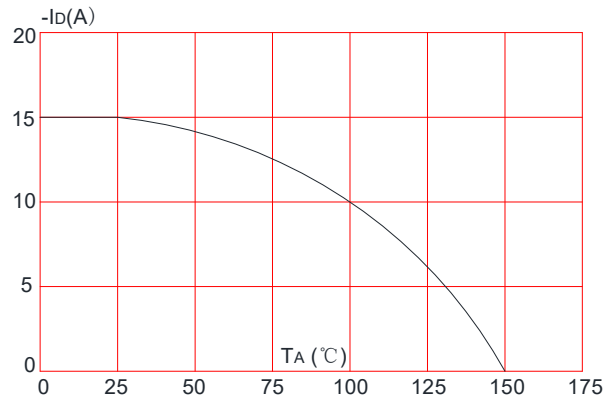
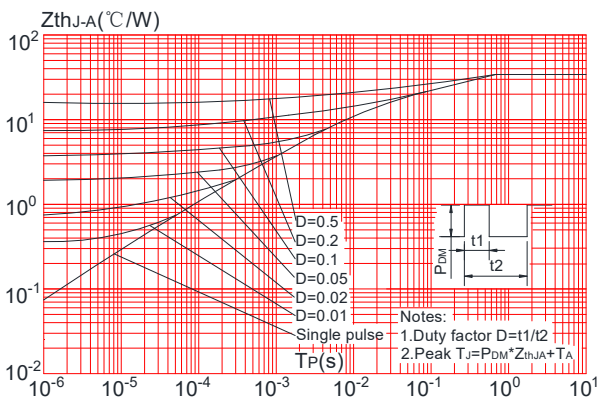
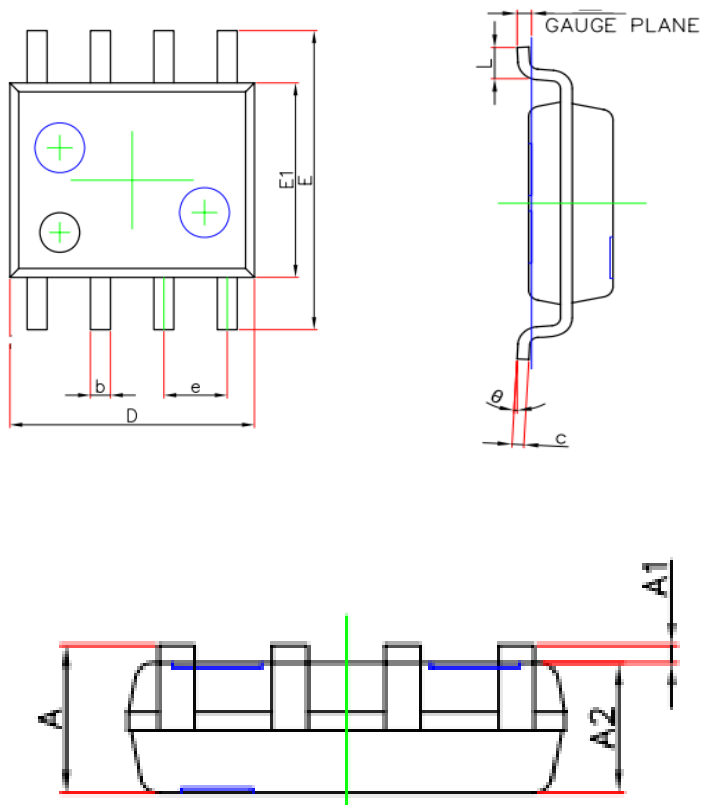


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



SOP-8 PACKAGE OUTLINE DRAWING



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E1	3.800	4.000	0.150	0.157
E	5.800	6.200	0.228	0.244
e	1.27(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°