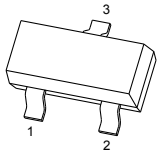
HM2307A P-Channel -20V(D-S) MOSFET

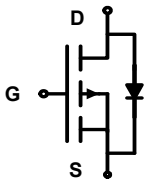
$V_{(BR)DSS}$	$R_{DS(on)}$	I_D Max
-20V	17mΩ @ -4.5V	-9.0A
	19mΩ @ -2.5V	

SOT-23-3L

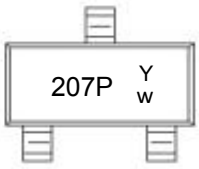


1.GATE
2.SOURCE
3.DRAIN

Equivalent Circuit



MARKING



Y :year code W :week code

FEATURE

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$
- Low Gate Charge
- High Power and Current Handing Capability
- Surface Mount Package

APPLICATION

- Load Switch
- Power Management

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	-9	A
Pulsed Drain Current (note 1)	I_{DM}	-25	A
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	100	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~+150	℃
Lead Temperature for Soldering Purposes(1/8'' from case for 10 s)	T_L	260	℃

MOSFET ELECTRICAL CHARACTERISTICS

T_a =25℃ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERICTISCS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	- 20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-18V,V_{GS} = 0V			-500	nA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±100	nA
Gate threshold voltage (note 3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.5	-0.62	-1.0	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-6A	15	17	21	mΩ
		V_{GS} =-2.5V, I_D =-5A	17	19	30	mΩ
Forward tranconductance (note 3)	g_{FS}	V_{DS} =-5V, I_D =-6A		17		S
Diode forward voltage (note 3)	V_{SD}	I_S=-2.0A, V_{GS} = 0V			-1.0	V
DYNAMIC CHARACTERICTISCS (note4)						
Input Capacitance	C_{iss}	V_{DS} =-10V,V_{GS} =0V,f =1MHz		1687		pF
Output Capacitance	C_{oss}			350		pF
Reverse Transfer Capacitance	C_{rss}			260		pF
SWITCHING CHARACTERICTISCS (note 4)						
Turn-on delay time	$t_{d(on)}$	V_{DD}=-10V, R_L=10Ω, V_{GS}=-4.5V,R_{GEN}=6Ω		25		ns
Turn-on rise time	t_r			30		ns
Turn-off delay time	$t_{d(off)}$			70		ns
Turn-off fall time	t_f			50		ns
Total Gate Charge	Q_g	V_{DS} =-10V,V_{GS} =-4.5V,I_D=-6A		17		nC
Gate-Source Charge	Q_{gs}			4.1		nC
Gate-Drain Charge	Q_{gd}			4.3		nC

Notes :

1.Repetitive rating：Pluse width limited by maximum junction temperature

2.Surface Mounted on FR4 board，t≤10 sec.

3. Pulse test : Pulse width≤300μs, duty cycle≤2%.

4. Guaranteed by design, not subject to production.

Typical Electrical and Thermal Characteristics

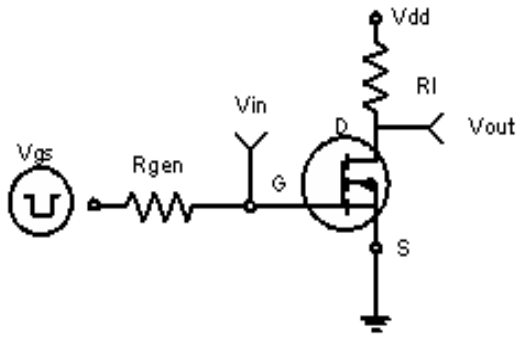


Figure 1 Switching Test Circuit

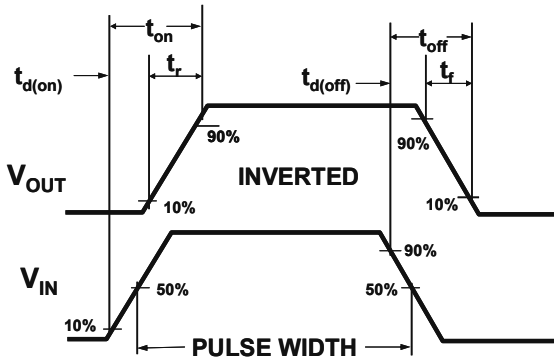


Figure 2 Switching Waveforms

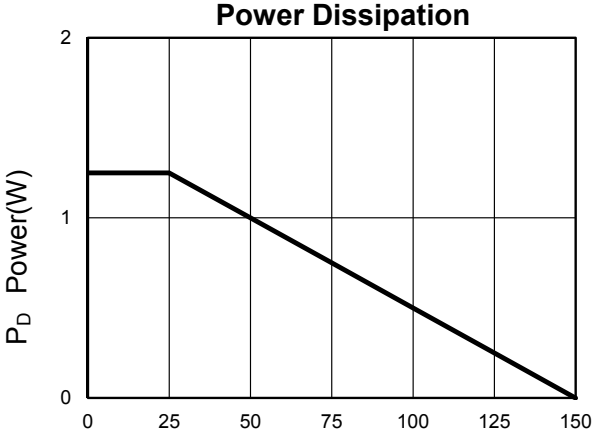


Figure 3 Power Dissipation

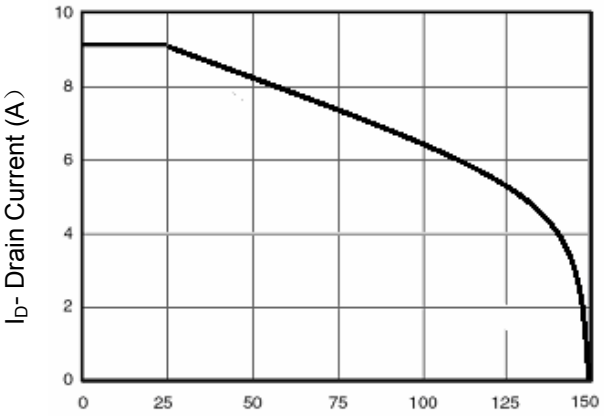


Figure 4 Drain Current

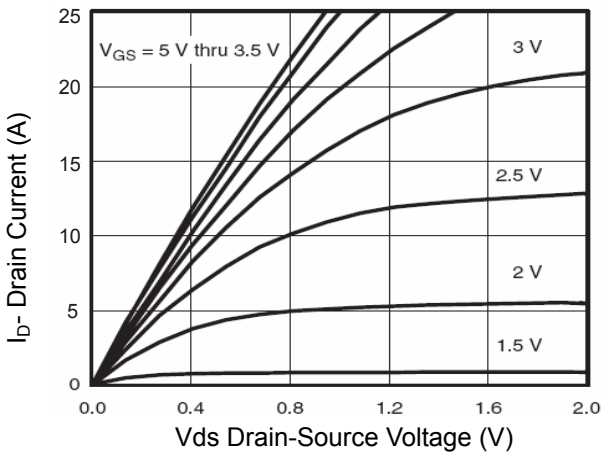


Figure 5 Output Characteristics

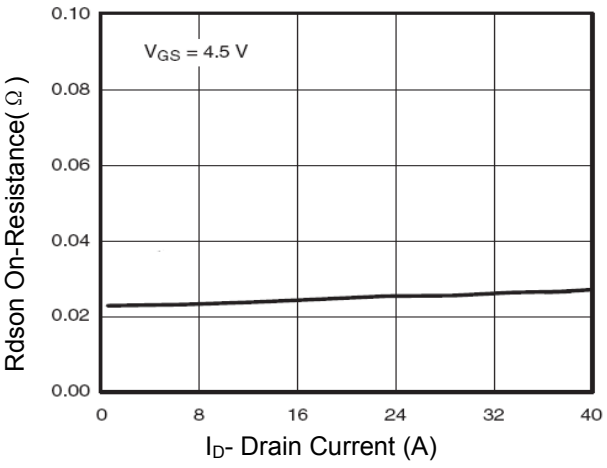


Figure 6 Drain-Source On-Resistance

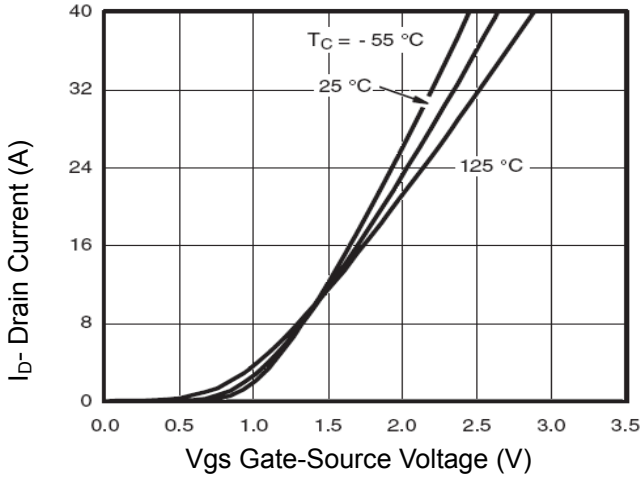


Figure 7 Transfer Characteristics

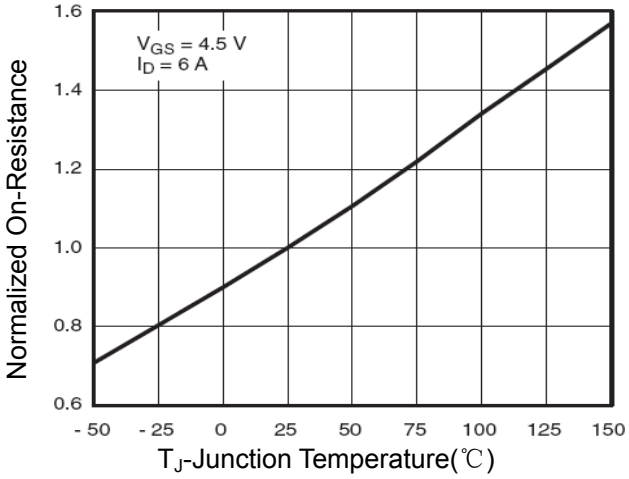


Figure 8 Drain-Source On-Resistance

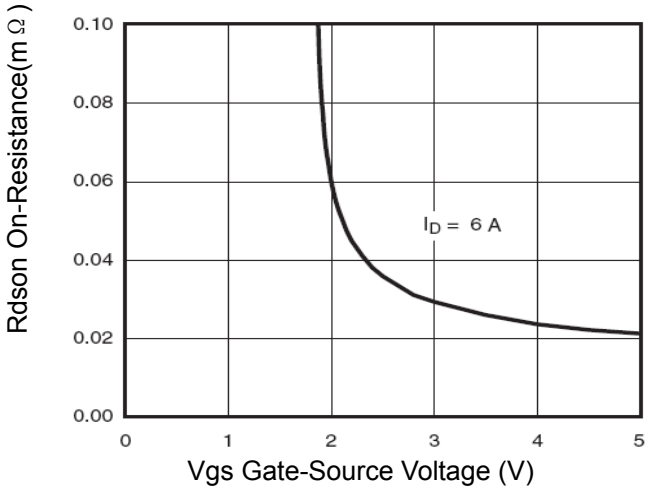


Figure 9 Rdson vs Vgs

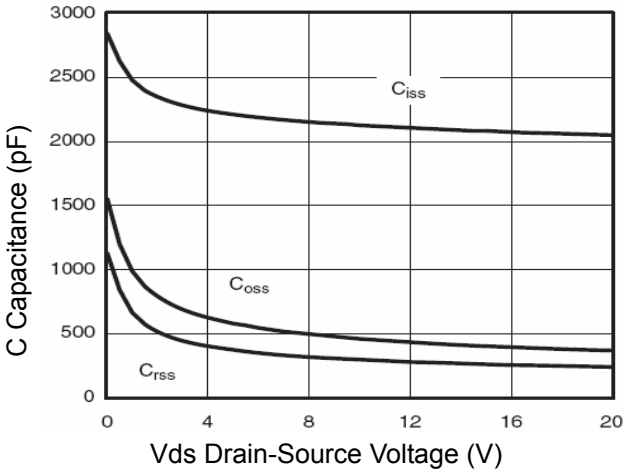


Figure 10 Capacitance vs Vds

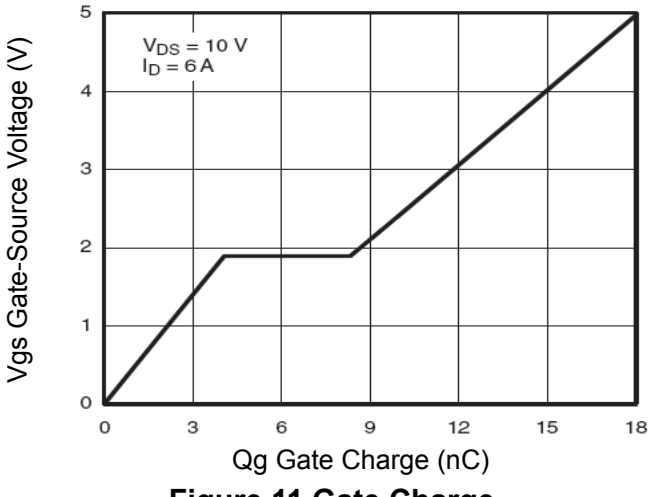


Figure 11 Gate Charge

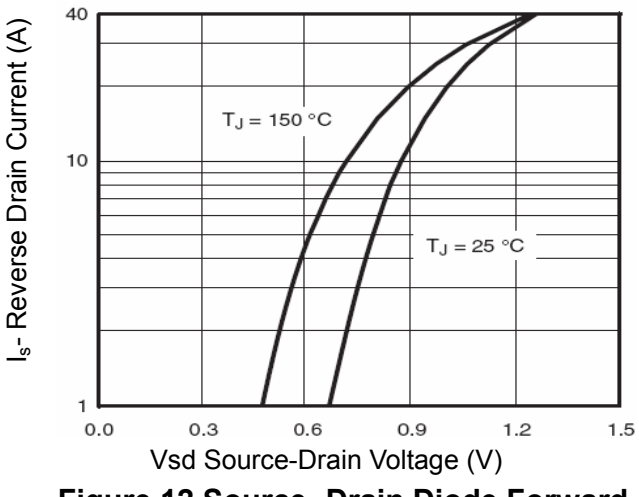


Figure 12 Source- Drain Diode Forward

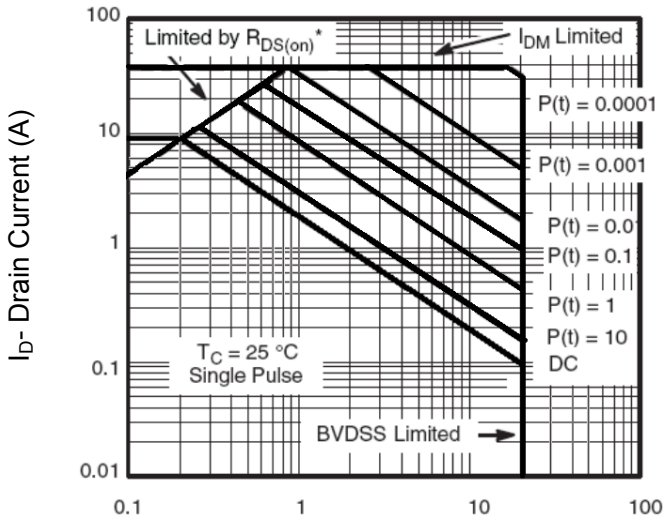


Figure 13 Safe Operation Area

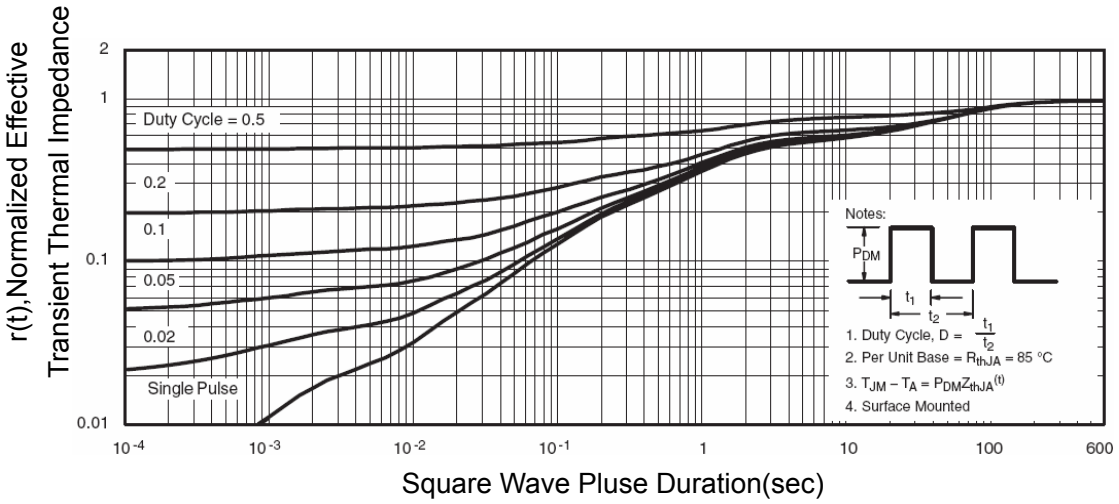
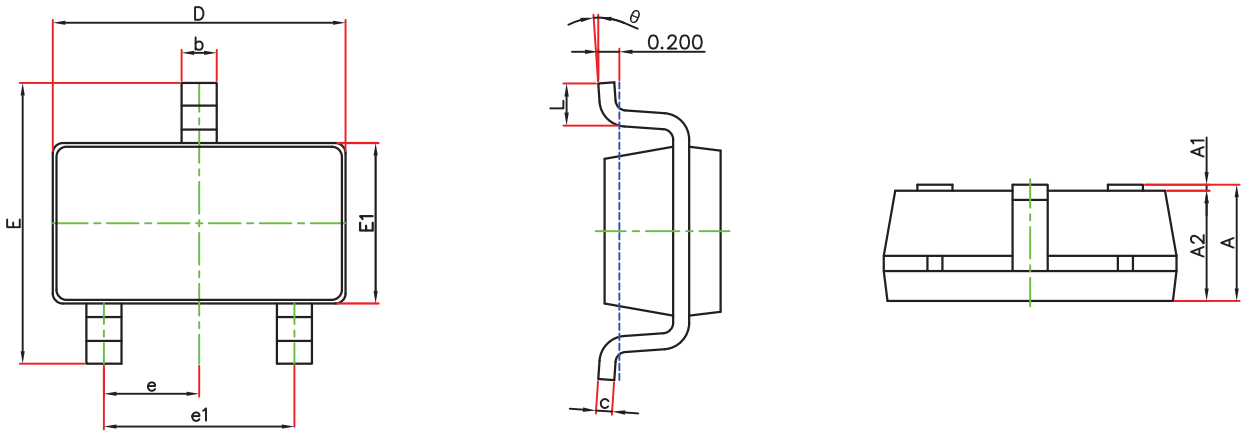


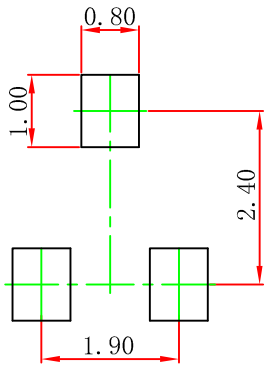
Figure 14 Normalized Maximum Transient Thermal Impedance

SOT-23-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

SOT-23-3L Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.