AS4005L

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-40V	85mΩ@-10V	-5.3A
	125mΩ@-4.5V	

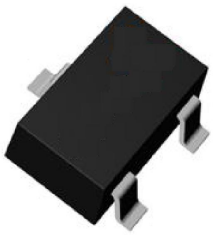
Feature

- High density cell design for low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Application

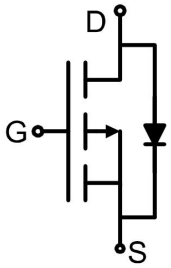
- DC-DC converter
- Power switching application
- Hard switched and high frequency circuits

Package

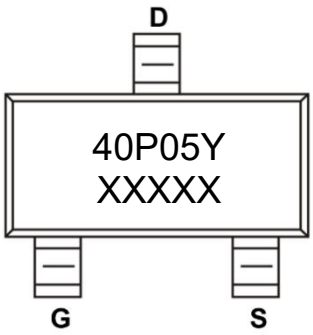


SOT-23-3L

Circuit diagram



Marking



Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-5.3	A
Continuous Drain Current（100℃）	I_D (100℃)	-3.7	A
Pulsed Drain Current[1)]	I_{DM}	-18	A
Power Dissipation	P_D	2	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-40V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage[3)]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0	-1.9	-3.0	V
Drain-source on-resistance[3)]	$R_{DS(on)}$	V_{GS} =-10V, I_D =-5.0A		73	85	mΩ
		V_{GS} =-4.5V, I_D =-4.0A		98	125	
Forward transconductance	g_{FS}	V_{DS} =-5V, I_D =-3A		5		S
Dynamic characteristics[4)]						
Input Capacitance	C_{iss}	V_{DS} =-20V,V_{GS} =0V,f =1MHz		600		pF
Output Capacitance	C_{oss}			90		
Reverse Transfer Capacitance	C_{rss}			70		
Total Gate Charge	Q_g	V_{DS} =-20V,V_{GS} =-10V, I_D =-3.0A		14		nC
Gate-Source Charge	Q_{gs}			2.9		
Gate-Drain Charge	Q_{gd}			3.8		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-20V, V_{GS} =-10V, R_L=2.0Ω R_{GEN}=3.0Ω		9		nS
Turn-on rise time	t_r			8		
Turn-off delay time	$t_{d(off)}$			28		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward Current[3)]	I_S				-5.3	A
Diode Forward voltage[2)]	V_{DS}	V_{GS} =0V, I_S=-3.3A			-1.2	V

Notes:

1) Repetitive Rating: Pulse 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 Characteristics

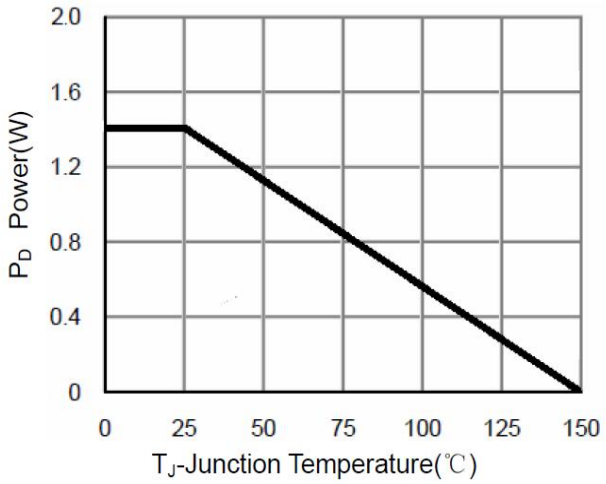


Figure 1 Power Dissipation

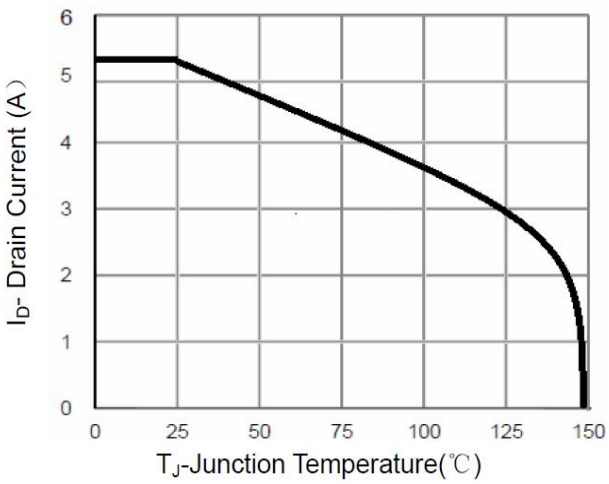


Figure 2 Drain Current

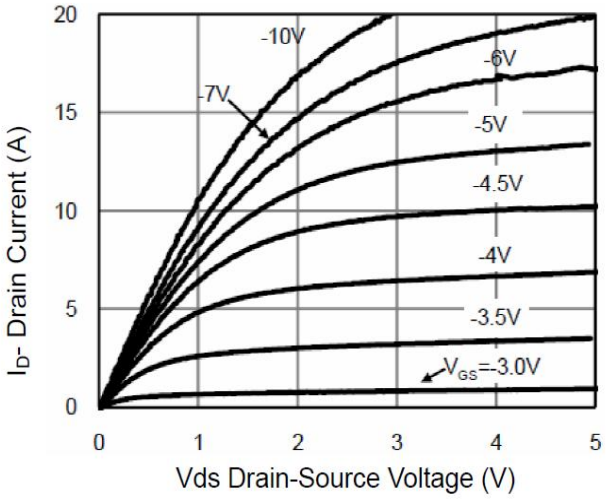


Figure 3 Output Characteristics

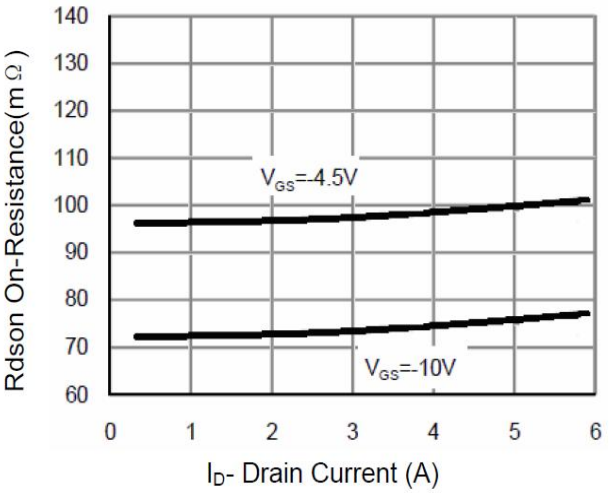


Figure 4 Drain-Source On-Resistance

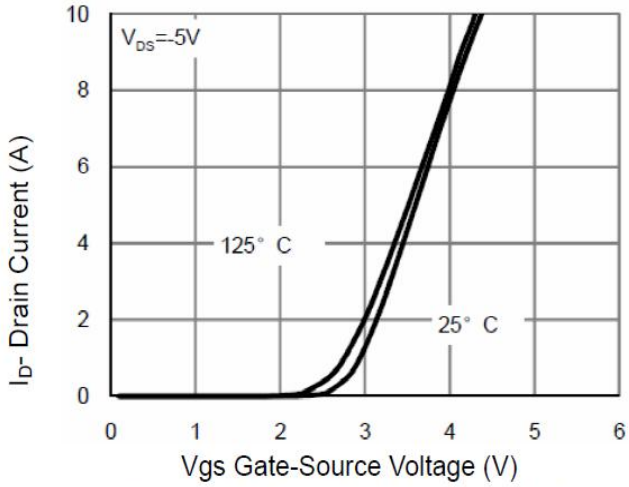


Figure 5 Transfer Characteristics

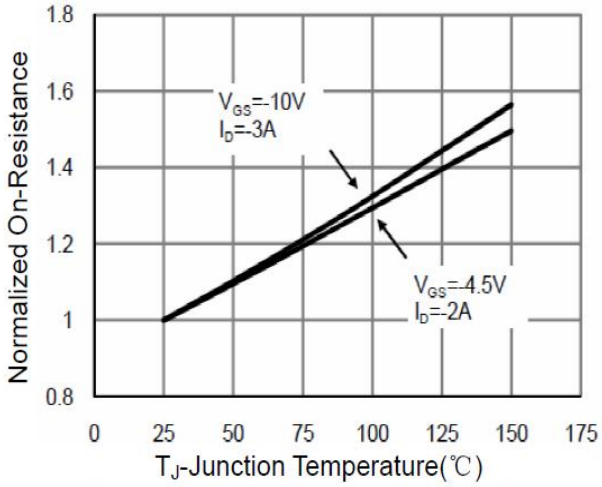


Figure 6 Drain-Source On-Resistance

Typical Characteristics

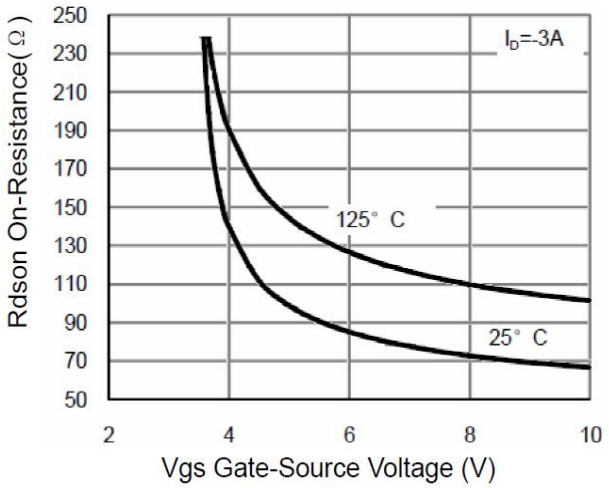


Figure 7 Rdson vs Vgs

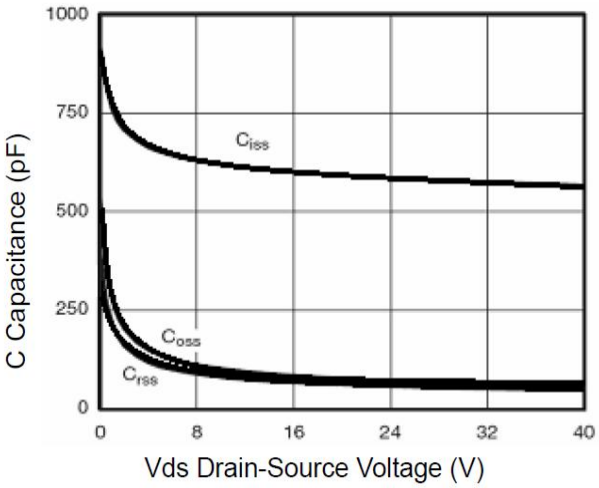


Figure 8 Capacitance vs Vds

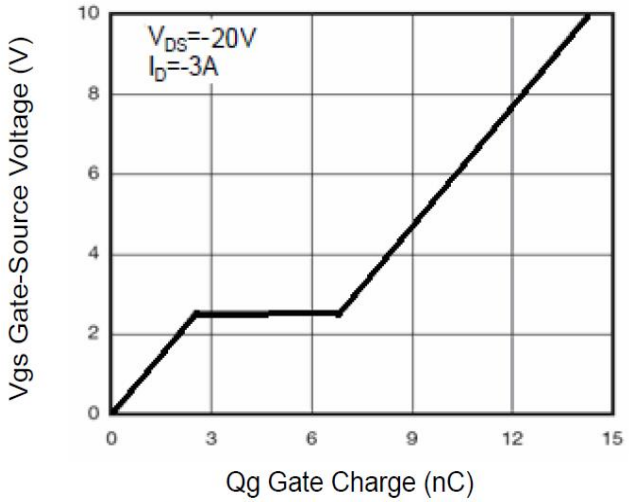


Figure 9 Gate Charge

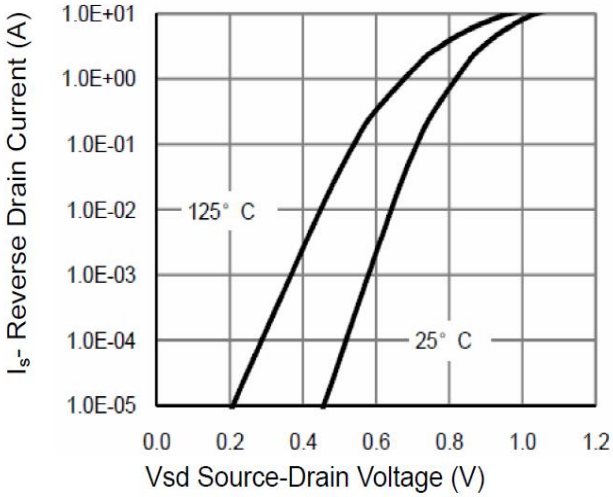


Figure 10 Source- Drain Diode Forward

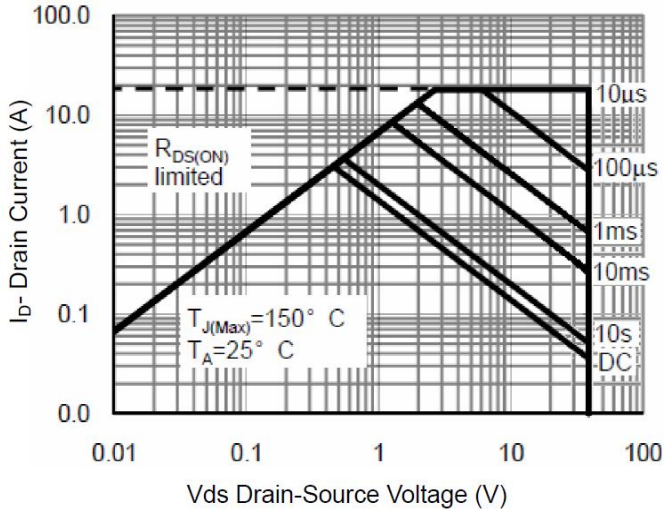


Figure 11 Safe Operation Area

Typical Characteristics

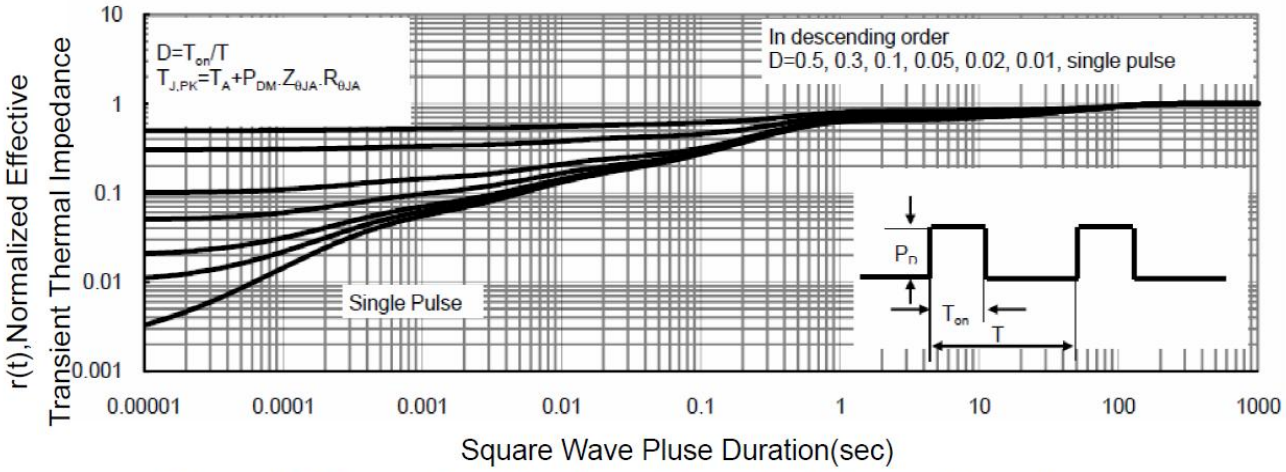
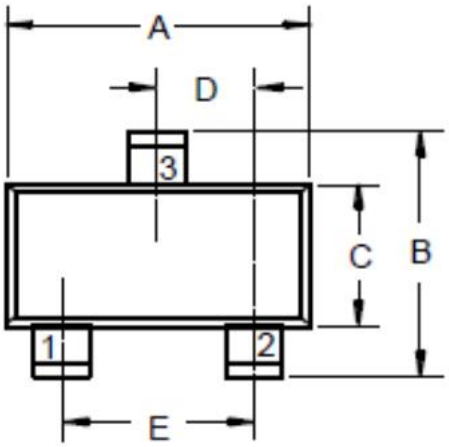
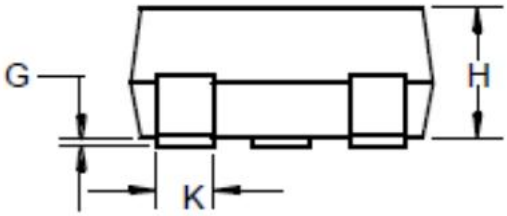
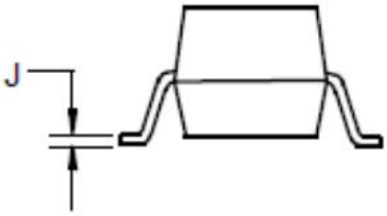


Figure 12 Normalized Maximum Transient Thermal Impedance

SOT-23-3L Package Information







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.820	3.020	0.111	0.119
B	2.650	2.950	0.104	0.116
C	1.500	1.700	0.059	0.067
D	0.865	1.015	0.034	0.040
E	1.800	2.000	0.071	0.079
G	0.000	0.100	0.000	0.004
H	1.050	1.250	0.041	0.049
J	0.100	0.200	0.004	0.008
K	0.300	0.500	0.012	0.020