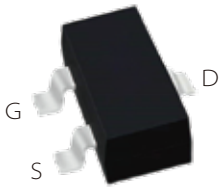
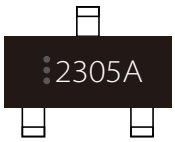
FEATURES

- V_{DS} = -20V, I_D = -4.1A $R_{DS(ON)}$ <38 mΩ @V_{GS}=-4.5V
- $R_{DS(ON)}$ <53mΩ @V_{GS}=-2.5V
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package



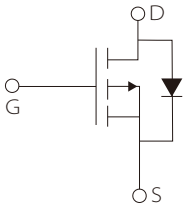
SOT-23



Marking

APPLICATION

- PWM applications
- Load switch
- Power management
- Video monitor



Schematic Symbol

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate Threshold Voltage	V_{GS}	±12	V
Maximum Drain Current - Continuous (Tc=25℃)	I_D	-4.1	A
Maximum Drain Current - Continuous(Tc=70℃)		-2.6	
Pulsed Drain Current(Note1)	I_{DM}	-16	A
Power Dissipation (Tc=25℃)	P_D	1	W
Thermal Resistance Junction- to- Ambient (Steady-State)	$R_{\theta JA}$	125	℃/W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 to 150	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250μA	-20			V
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V			-1	uA
On Characteristics(Note 3)						
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.4	-0.7	-1.0	V
Drain-Source On–State Resistance	$R_{DS(on)}$	V_{GS}=-4.5V,I_D=-4.1A		30	38	mΩ
		V_{GS}=-2.5V,I_D=-3A		38	53	mΩ
Gate Resistance	Rg			1		Ω
Dynamic Characteristics(Note 4)						
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V,f=1MHz		830		pF
Output Capacitance	C_{oss}			132		pF
Reverse Transfer Capacitance	C_{rss}			85		pF
Switching Characteristics(Note 4)						
Turn–on Delay Time	$t_{d(on)}$	V_{DD}=-10V,I_D=-3.3A V_{GEN}=-4.5V,R_G=1Ω		10		ns
Turn–on Rise Time	t_r			32		ns
Turn–Off Delay Time	$t_{d(off)}$			50		ns
Turn–off Fall Time	t_f			51		ns
Total Gate Charge	Q_{gs}	V_{DS}=-10V,I_D=-2A V_{GS}=-4.5V		8.8		nC
Gate-Source Charge	Q_{gs}			1.4		nC
Gate-Drain Charge	Q_{gd}			1.9		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{DS}	V_{GS}=0V,I_S=-4.1A		-0.8	-1.2	V

PARAMETER CHARACTERISTIC CURVE

Figure1: Switching Test Circuit

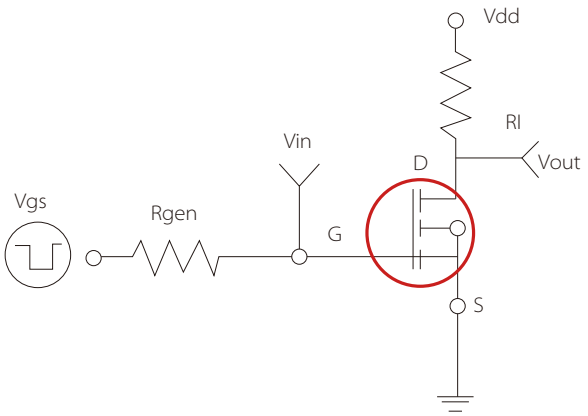


Figure2: Switching Waveforms

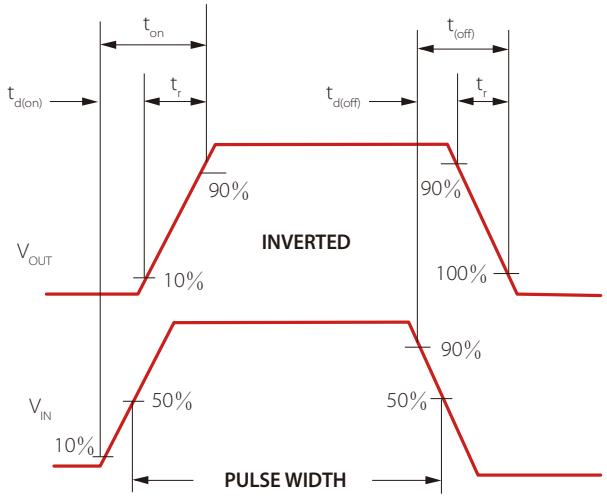


Figure3: Power Dissipation

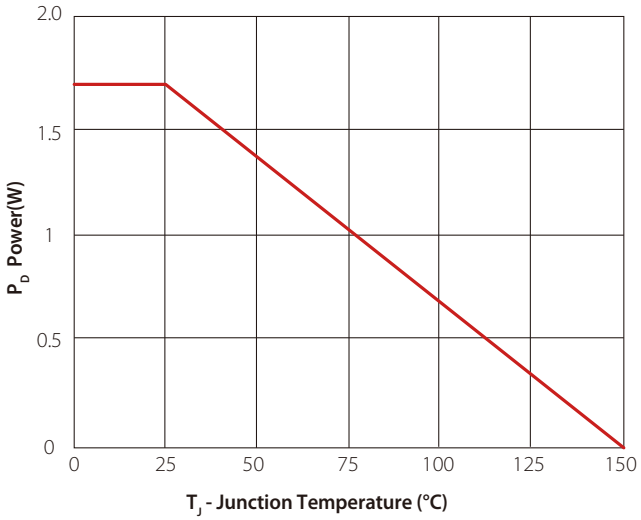


Figure 4: Frain Current

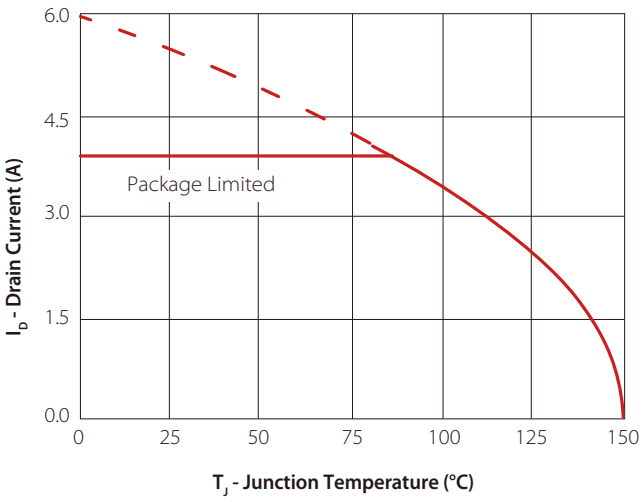


Figure 5: Output Characteristics

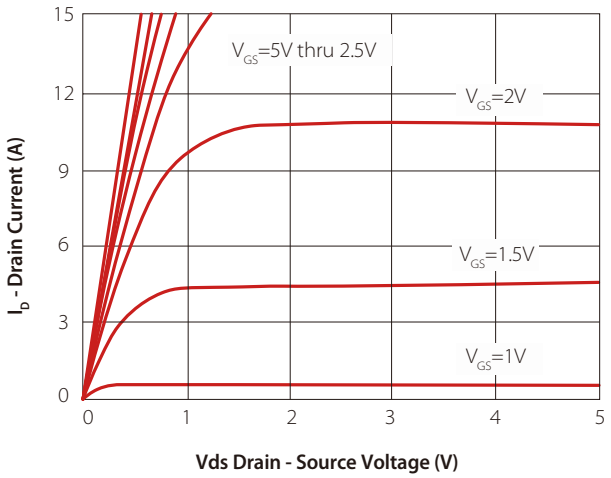


Figure 6: Drain-Source On-Resistance

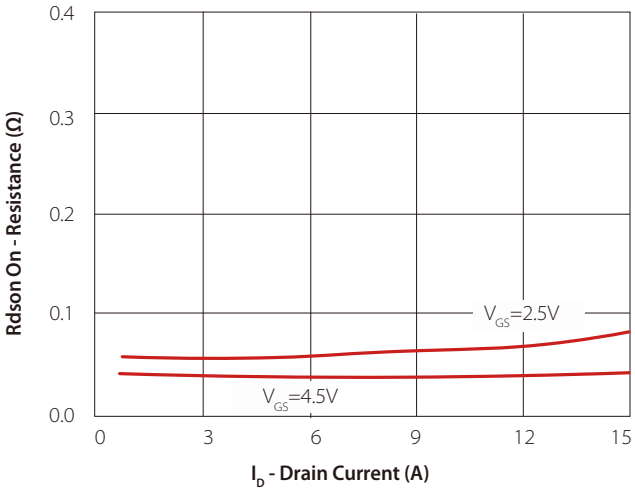


Figure 7: Transfer Characteristics

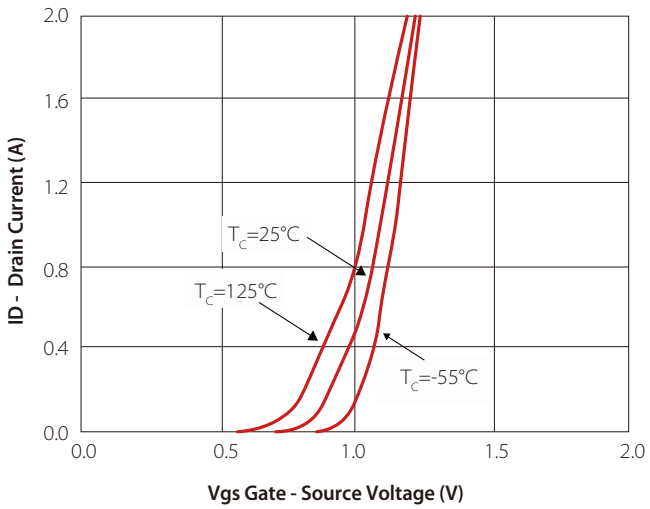


Figure 8: Drain-Source On-Resistance

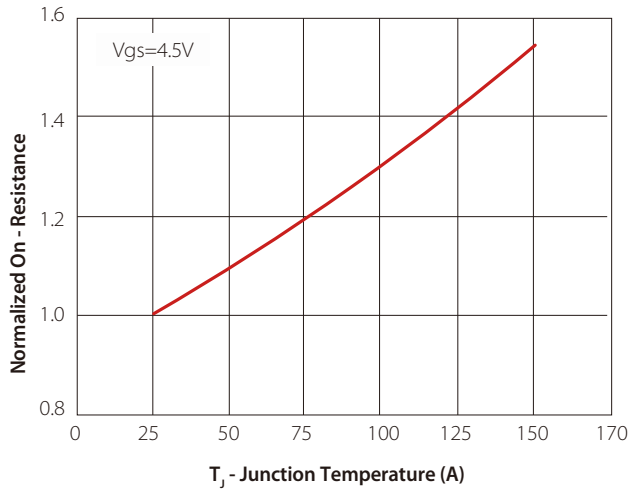


Figure 9: Rdson vs Vgs

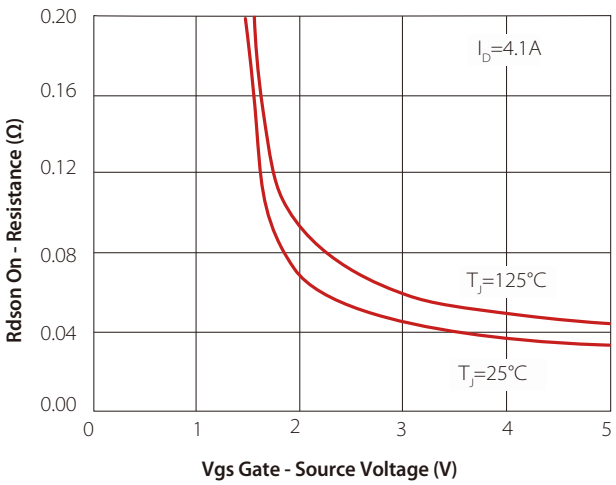


Figure 10: Capacitance vs Vds

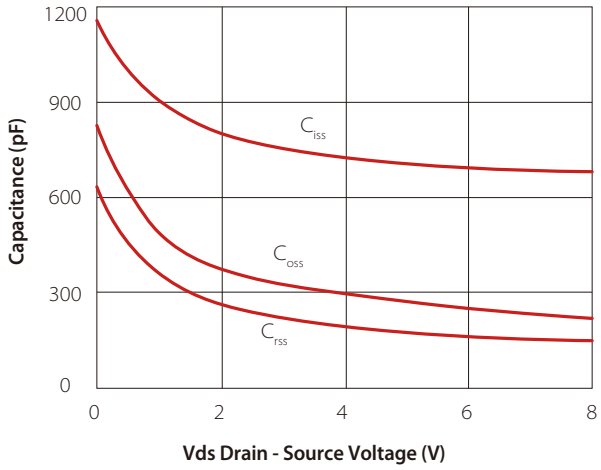


Figure 11: Gate Charge

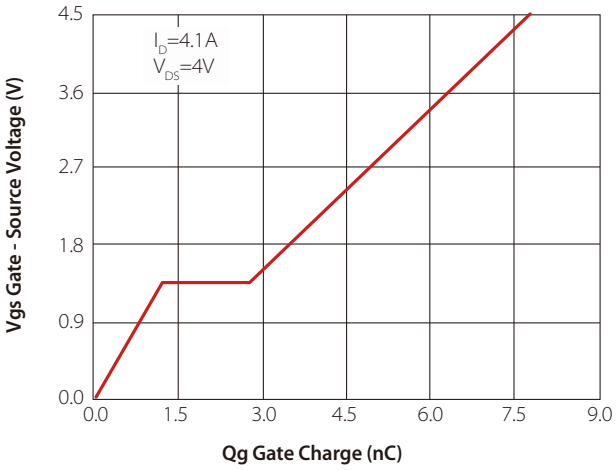


Figure 12: Source-Drain Diode Forward

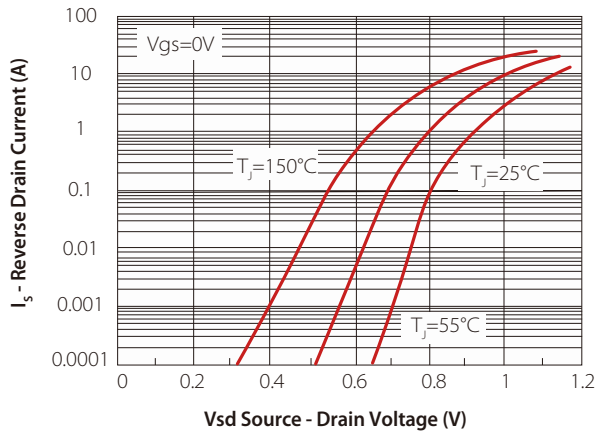


Figure 13: Safe Operation Area

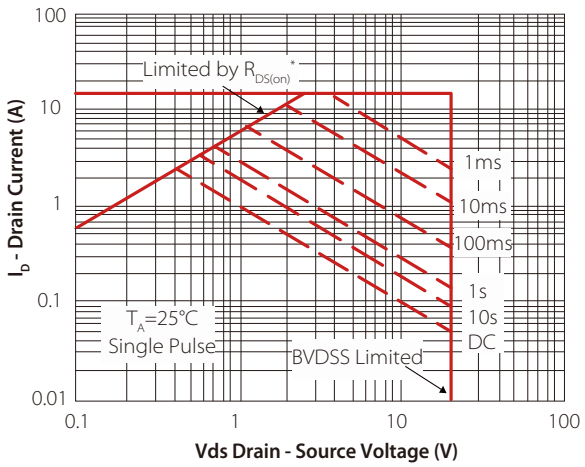
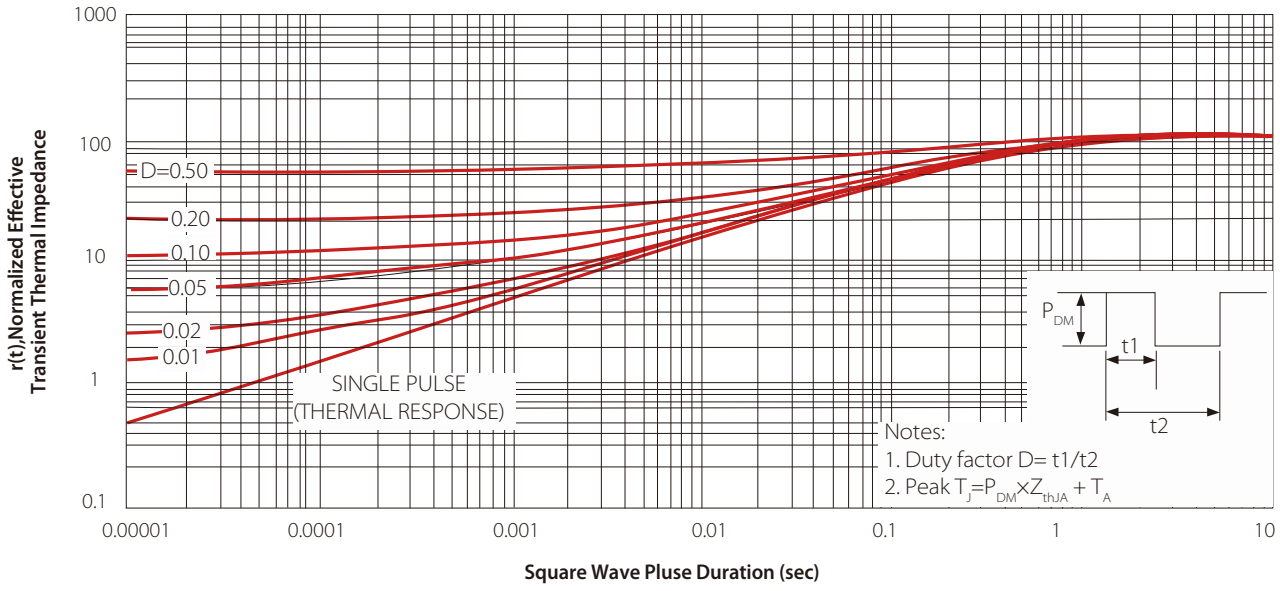
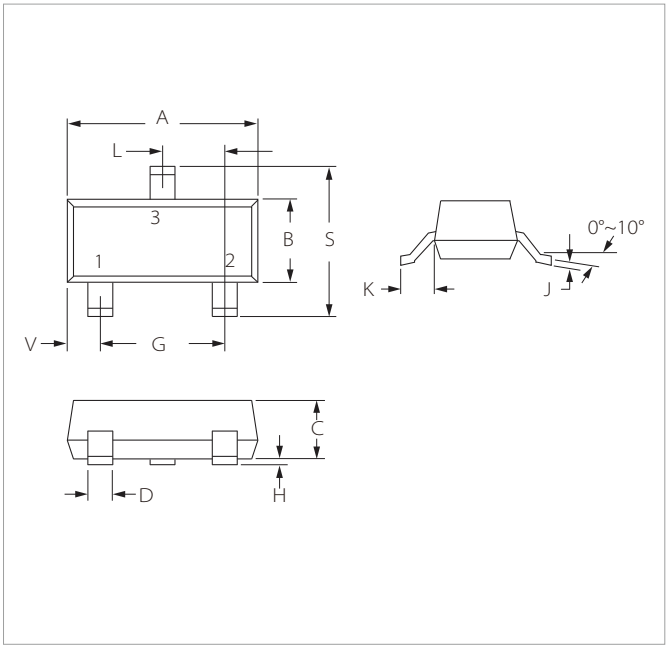


Figure 14: Normalized Maximim Transient Thermal Impedance

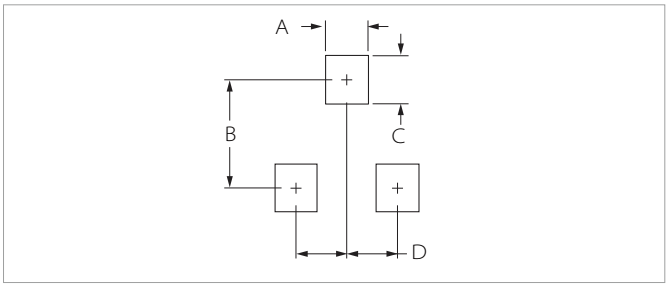


SOT-23 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min	Max	Min	Max
A	2.80	3.04	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.89	1.11	0.035	0.044
D	0.37	0.50	0.015	0.020
G	1.78	2.04	0.070	0.081
H	0.01	0.100	0.001	0.004
J	0.085	0.180	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.10	2.64	0.083	0.104
V	0.45	0.60	0.018	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min	Max	Min	Max
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM2305	SOT-23	3000PCS	7″

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