P-Channel Enhancement Mode Power MOSFET

Description

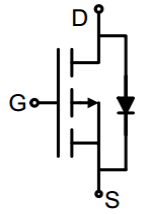
The G29 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

General Features

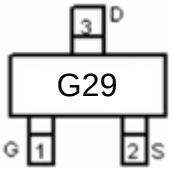
- V_{DS} -15V
- I_D (at V_{GS} = -12V) -4.1A
- $R_{DS(ON)}$ (at V_{GS} = - 4.5V) < 30mΩ
- $R_{DS(ON)}$ (at V_{GS} = - 2.5V) < 40mΩ
- $R_{DS(ON)}$ (at V_{GS} = - 1.8V) < 56mΩ
- RoHS Compliant

Application

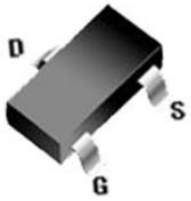
- Power switch
- DC/DC converters



Schematic diagram



Marking and pin assignment



SOT-23

Device	Package	Marking	Packaging
G29	SOT-23	G29	3000pcs/Reel

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-15	V
Continuous Drain Current	I_D	-4.1	A
Pulsed Drain Current (note1)	I_{DM}	-20	A
Gate-Source Voltage	V_{GS}	±12	V
Power Dissipation	P_D	1.05	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 To 150	ºC

Thermal Resistance

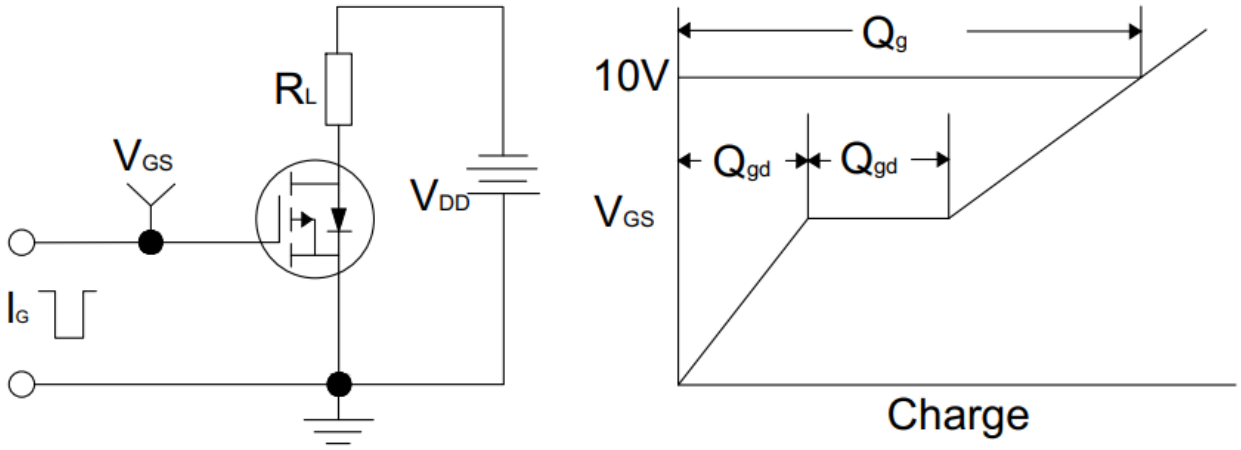
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	R_{thJA}	120	ºC/W

Specifications T_J = 25ºC, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-15	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -15V, V_{GS} = 0V	--	--	-1	uA
Gate-Source Leakage	I_{GSS}	V_{GS} =±12V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.4	-0.55	-0.9	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} =-4.5V, I_D = -4A	--	24	30	mΩ
		V_{GS} = -2.5V, I_D = -3A	--	32	40	
		V_{GS} = -1.8V, I_D = -2A	--	40	56	
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-2A	5	--	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -4V, f = 1.0MHz	--	740	--	pF
Output Capacitance	C_{oss}		--	290	--	
Reverse Transfer Capacitance	C_{rss}		--	190	--	
Total Gate Charge	Q_g	V_{DD} = -4V, I_D = -4.1A, V_{GS} = -4.5V	--	7.8	--	nC
Gate-Source Charge	Q_{gs}		--	1.2	--	
Gate-Drain Charge	Q_{gd}		--	1.6	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -4V, I_D = -3.3A, R_G = 1Ω	--	12	--	ns
Turn-on Rise Time	t_r		--	35	--	
Turn-off Delay Time	$t_{d(off)}$		--	30	--	
Turn-off Fall Time	t_f		--	10	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25ºC	--	--	-4.1	A
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = -1.6A, V_{GS} = 0V	--	--	-1.2	V

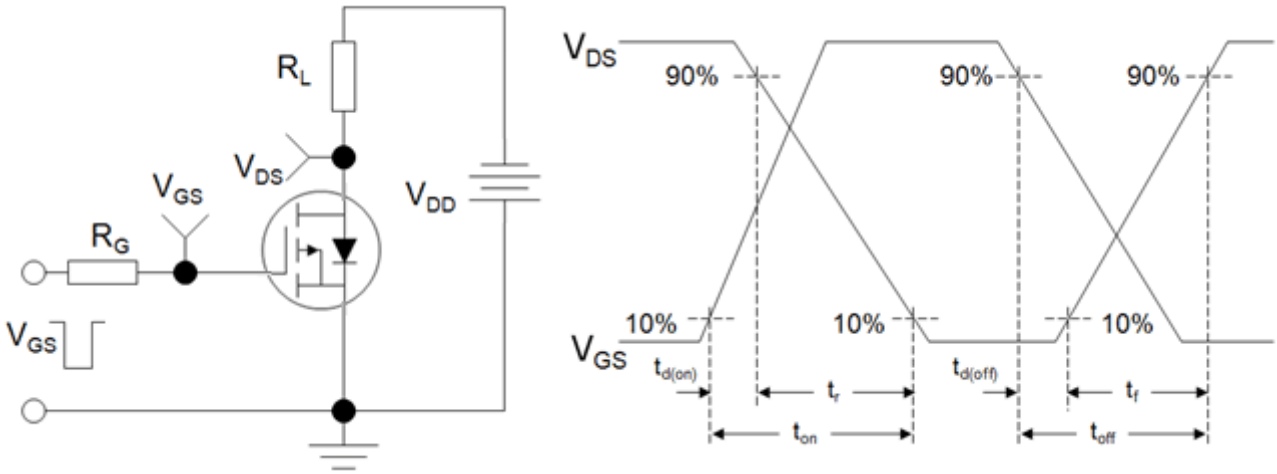
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical R_G

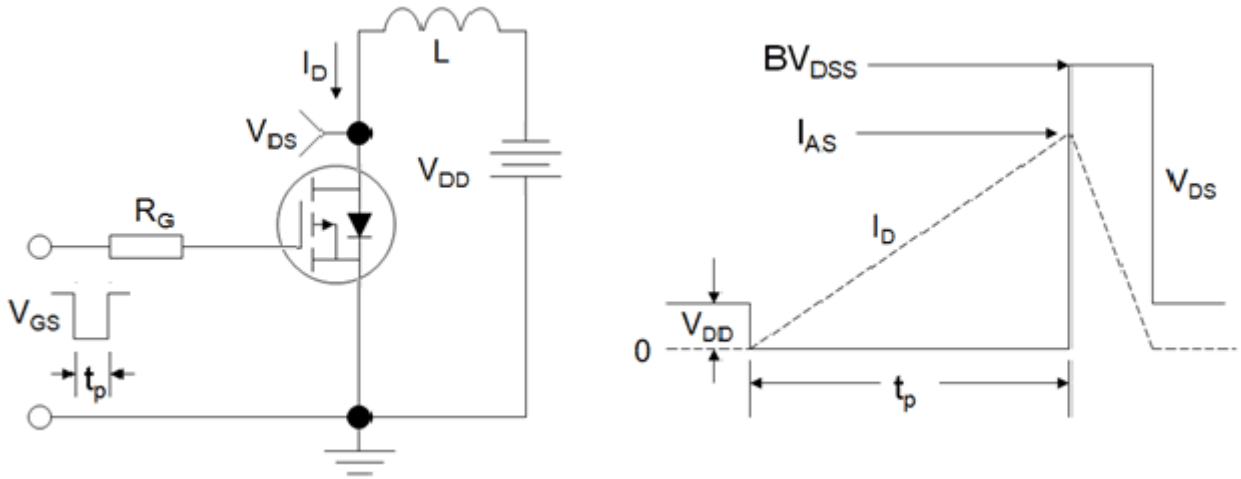
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics

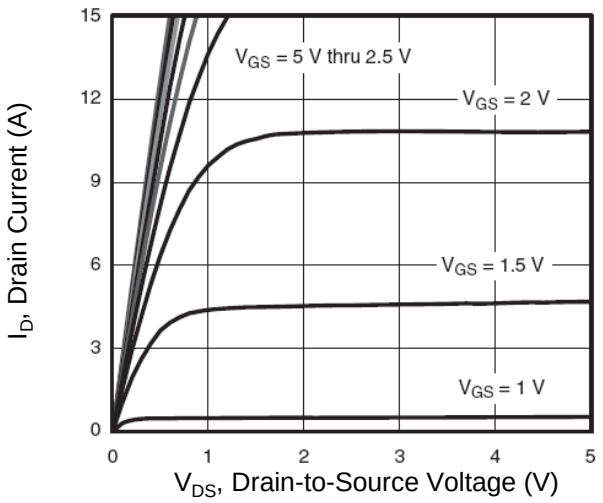


Figure 2. Transfer Characteristics

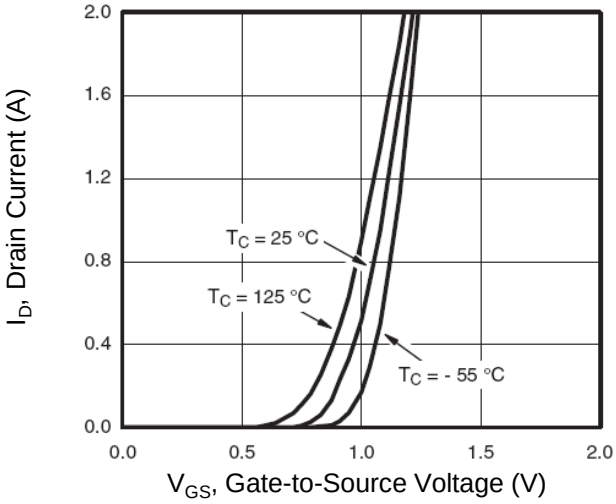


Figure 3. Gate Charge

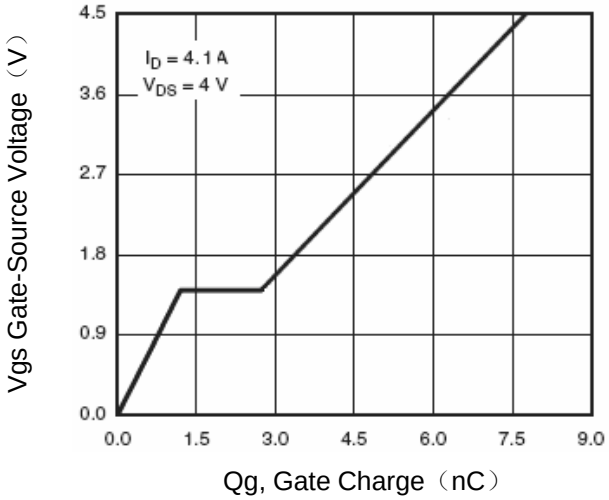


Figure 4. Drain Source On Resistance

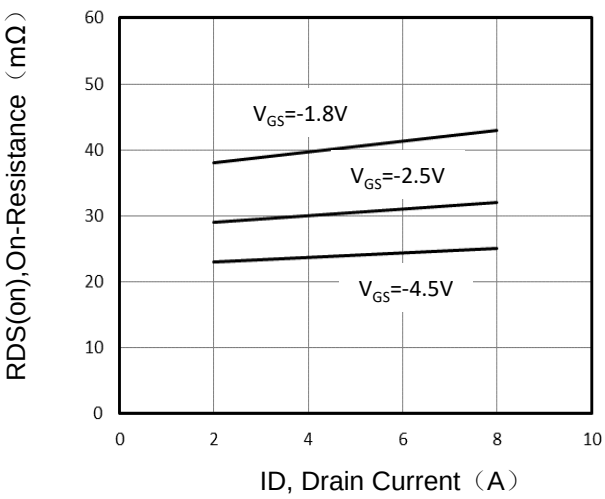


Figure 5. Capacitance

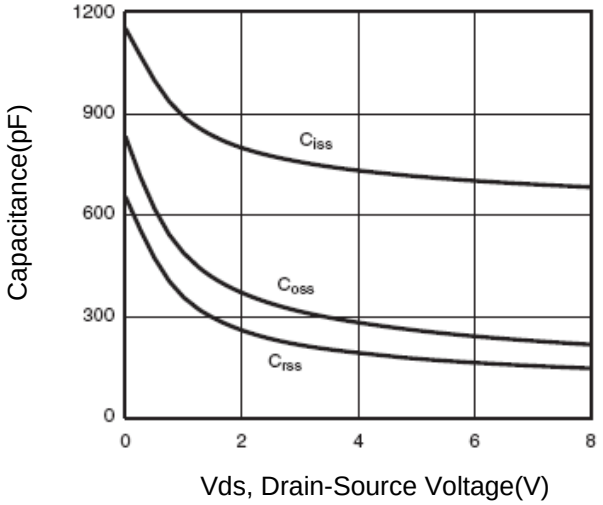
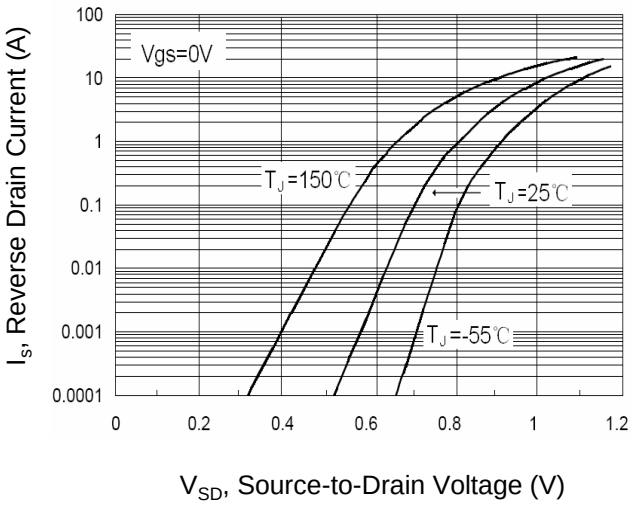


Figure 6. Source-Drain Diode Forward



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. Drain-Source On-Resistance

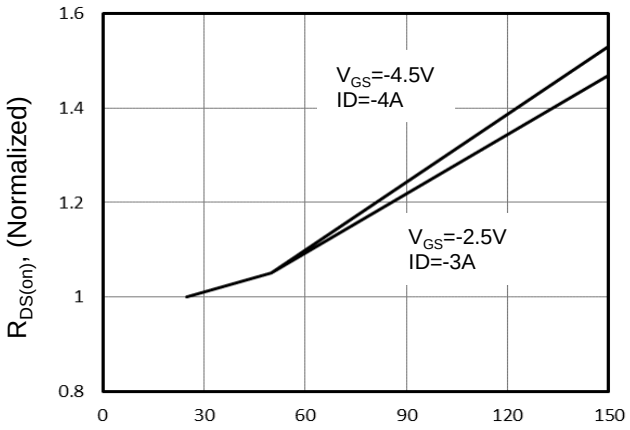


Figure 8. Safe Operation Area

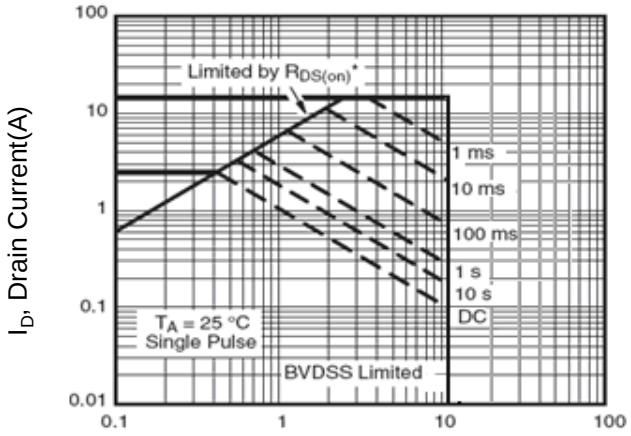
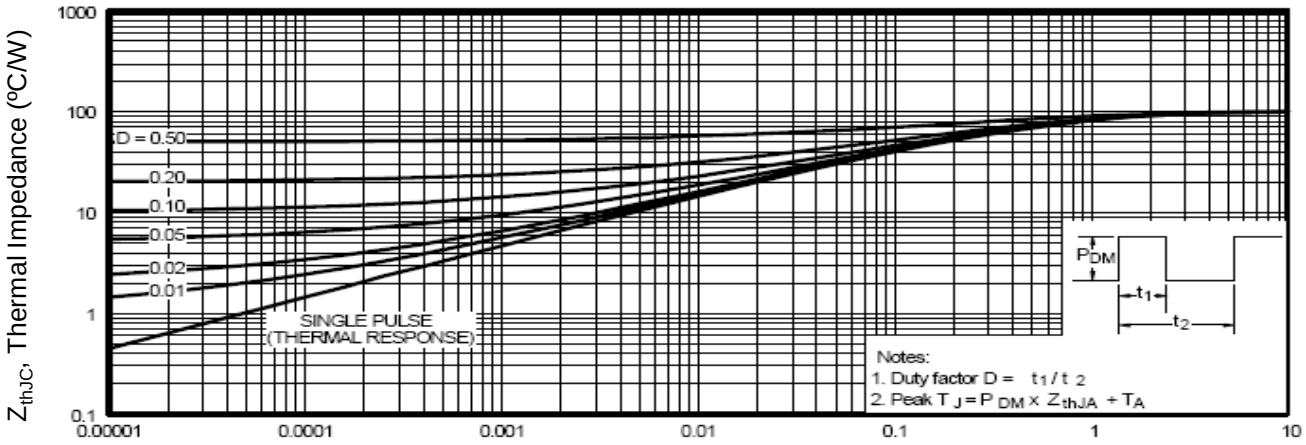
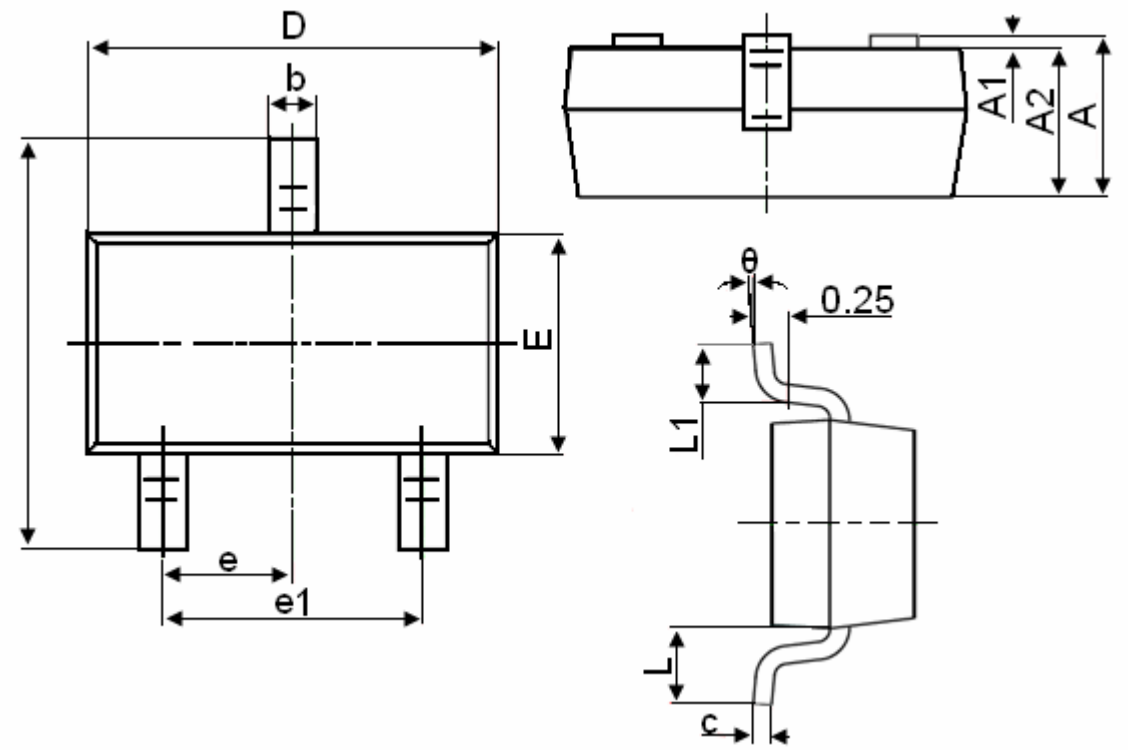


Figure 9. Normalized Maximum Transient Thermal Impedance



SOT-23 Package Information



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°