

Product Summary

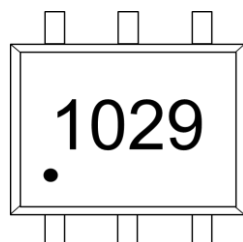
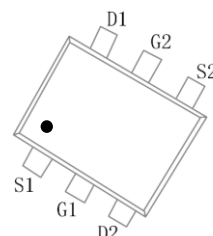
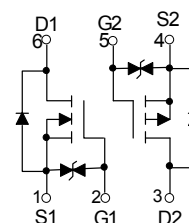
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	1.4Ω@10V	0.3A
	1.5Ω@4.5V	
-60V	2.3Ω@-10V	-0.19A
	2.7Ω@-4.5V	

Feature

- Trench Technology Power MOSFET
- Very Small Footprint
- Low Switching Time
- Low Gate Charge

Application

- Replace Digital Transistor, Level-Shifter
- Battery Operated Systems
- Power Supply Converter Circuits

MARKING:

SOT-563

Schematic diagram

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	NMOS	PMOS	Unit
Drain - Source Voltage	V_{DS}	60	-60	V
Gate - Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current ¹	I_D	0.3	-0.19	A
Pulsed Drain Current ²	I_{DM}	1.2	-0.76	A
Power Dissipation ⁴	P_D	0.25	0.25	W
Thermal Resistance from Junction to Ambient ⁵	$R_{\theta JA}$	500	500	°C/W
Junction Temperature	T_J	150	150	°C
Storage Temperature	T_{STG}	-55~+150	-55~+150	°C
Gate-Source ESD Rating(Based on HBM) ⁶	ESD	2500	3600	V

MOSFET ELECTRICAL CHARACTERISTICS ($T_J = 25^{\circ}\text{C}$ unless otherwise noted)
NMOS:

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 48V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±3	μA
On Characteristics ³						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1	1.5	3	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 0.3A		1.4	3	Ω
		V _{GS} = 4.5V, I _D = 0.1A		1.5	4	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 30V, V _{GS} = 0V, f = 1MHz		24.5		pF
Output Capacitance	C _{oss}			5.4		
Reverse Transfer Capacitance	C _{rss}			2.5		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		155		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 10V, V _{GS} = 4.5V, I _D = 0.25A		325		pC
Gate-source Charge	Q _{gs}			189		
Gate-drain Charge	Q _{gd}			95		
Turn-on Delay Time	t _{d(on)}	V _{DD} = 30V, V _{GS} = 4.5V, R _L = 150Ω R _G = 25Ω		3.7		ns
Turn-on Rise Time	t _r			2.9		
Turn-off Delay Ttime	t _{d(off)}			14.5		
Turn-off Fall Time	t _f			8		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	V _{GS} = 0V, I _S = 0.3A			1.2	V

PMOS:

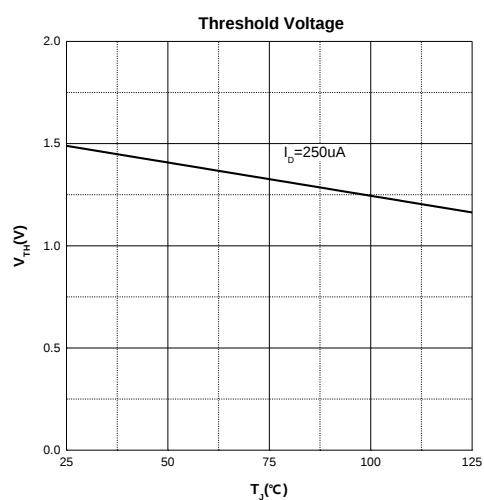
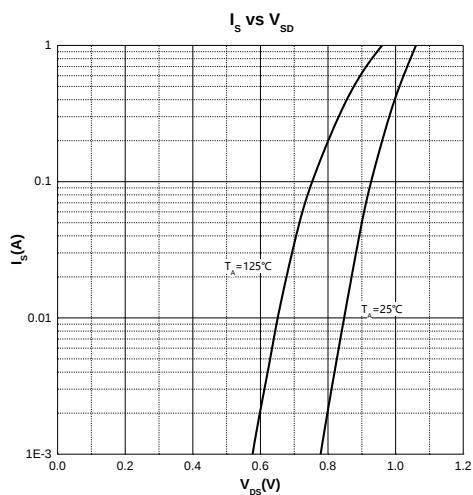
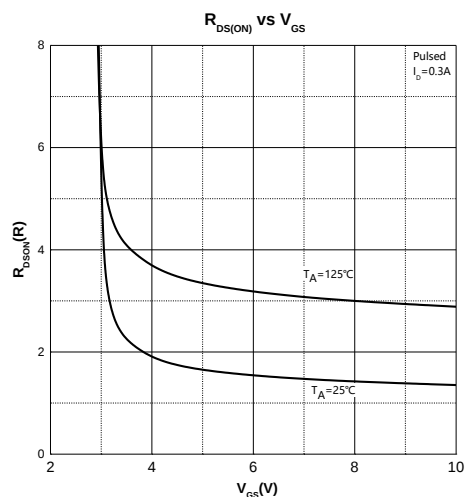
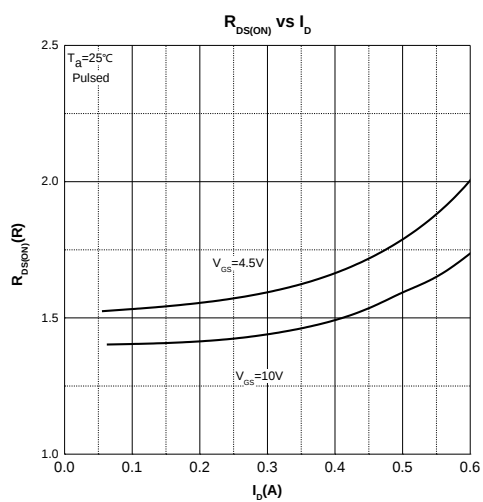
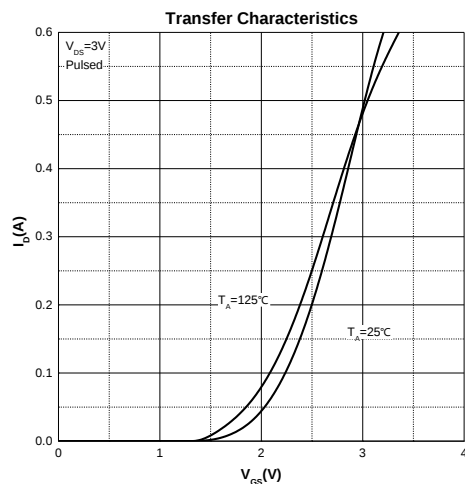
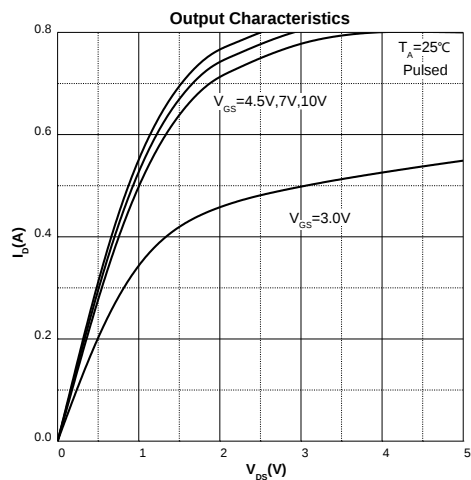
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -48V, V_{GS} = 0V$			-1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 3	μA
On Characteristics ³						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.5	-3	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -0.1A$		2.3	4	Ω
		$V_{GS} = -4.5V, I_D = -0.1A$		2.7	5	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = -25V, V_{GS} = 0V, f = 1MHz$		30		pF
Output Capacitance	C_{oss}			7.5		
Reverse Transfer Capacitance	C_{rss}			4.2		
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		160		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = -30V, V_{GS} = -15V, I_D = -0.5A$		1600		pC
Gate-source Charge	Q_{gs}			250		
Gate-drain Charge	Q_{gd}			500		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -15V, V_{GS} = -10V, R_L = 50\Omega$ $R_G = 3\Omega$		2.5		ns
Turn-on Rise Time	t_r			1		
Turn-off Delay Ttime	$t_{d(off)}$			16		
Turn-off Fall Time	t_f			8		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$V_{GS} = 0V, I_S = -0.1A$			-1.2	V

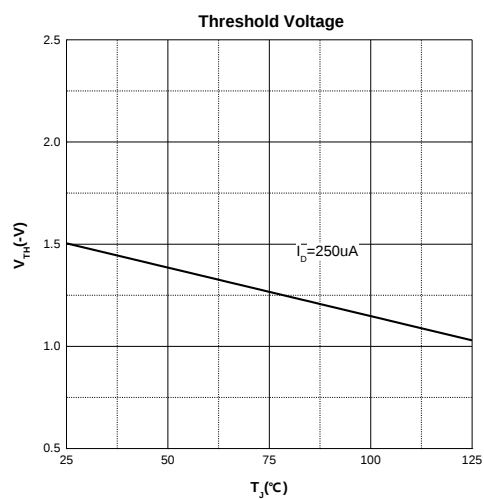
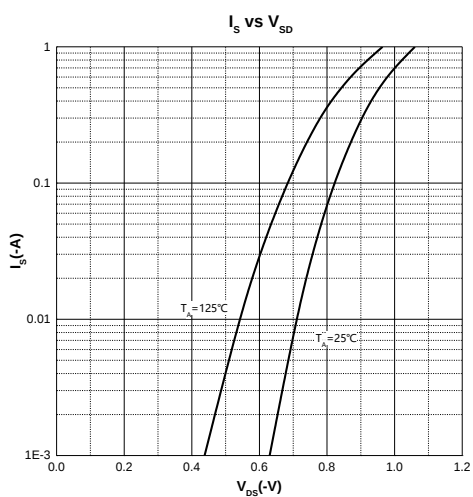
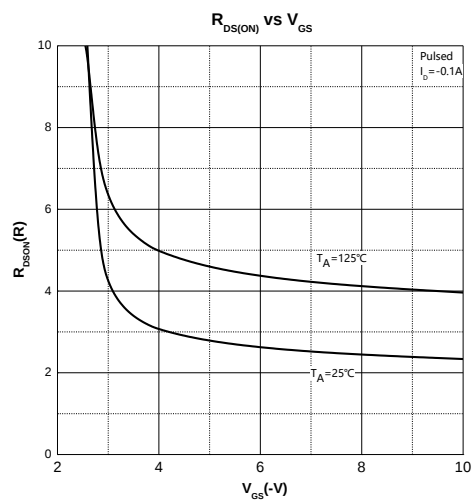
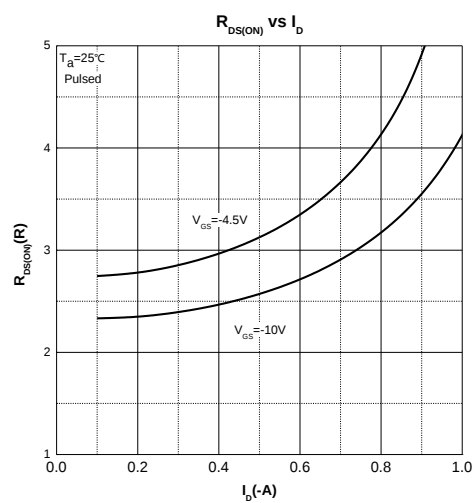
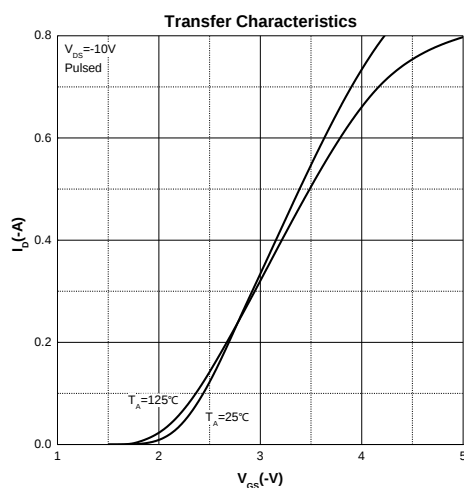
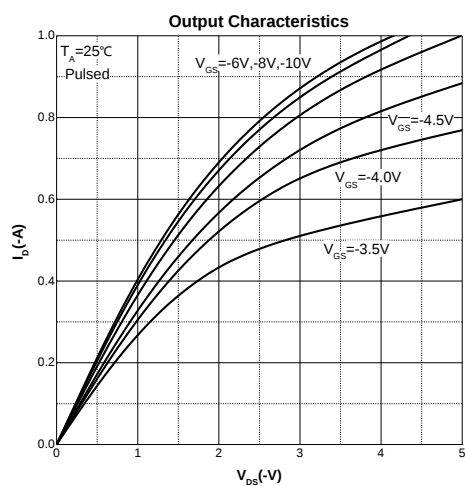
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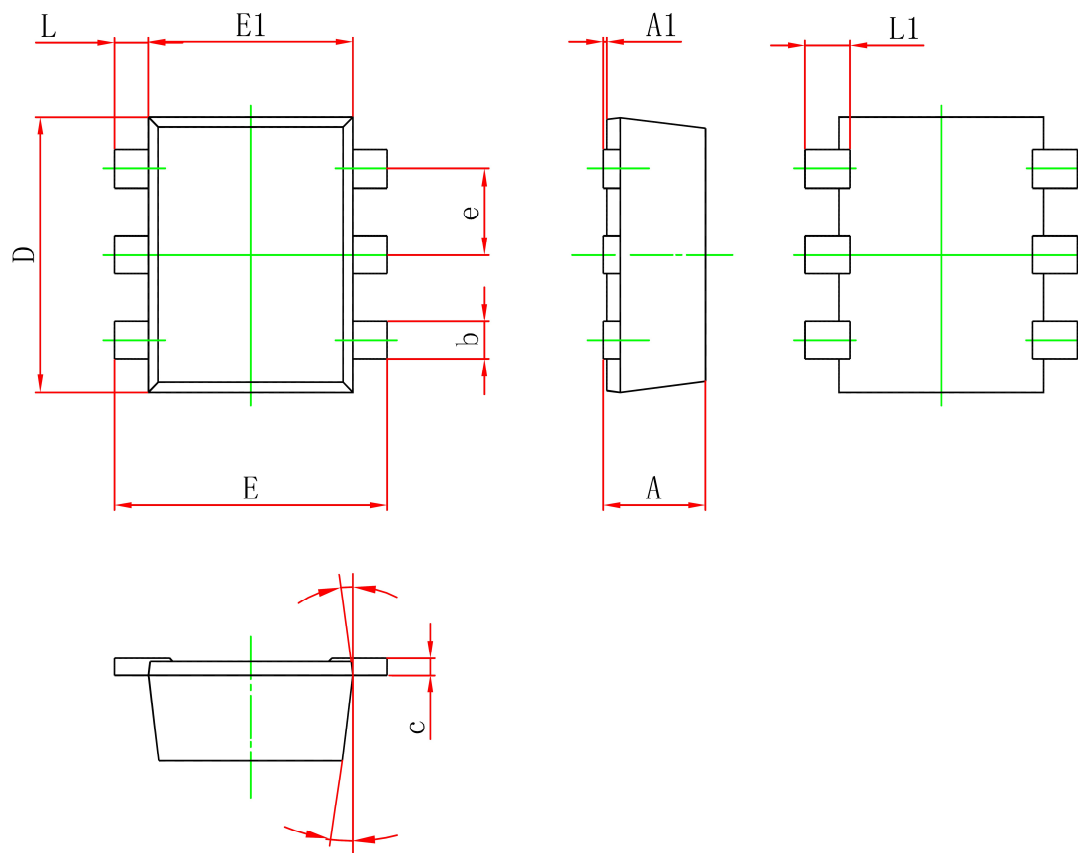
- 1.The maximum current rating is based on $R_{\theta JA}$
- 2.Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 4.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ C$.and based on $R_{\theta JA}$
- 5.Device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$.
- 6.ESD test standard and method:MIL-STD-883K/Method 3015.9

Typical Characteristics

NMOS:



PMOS:


SOT-563 Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.500	0.600	0.020	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.080	0.180	0.003	0.007
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
L1	0.200	0.400	0.008	0.016
θ	7°		7°	