

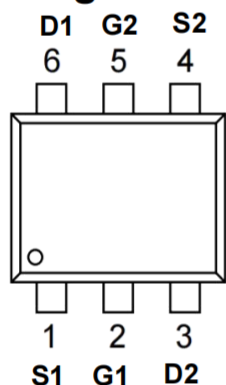
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30 V	300mΩ@ 4.5V	0.9A
	400mΩ@ 2.5V	
-30V	300mΩ@-4.5V	-0.9A
	400mΩ@-2.5V	

Application

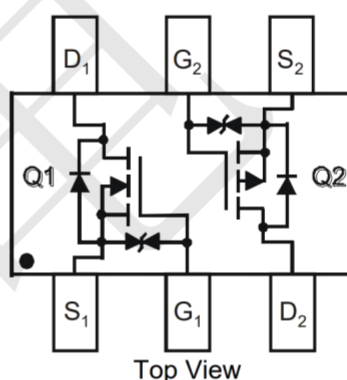
- Reverse Battery protection
- Load switch
- Power management
- Motor Control
- Portable Power Adaptors

Package and Pin Configuration



SOT563

Circuit diagram



Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Characteristic			Symbol	Q1 N-CHANNEL	Q2 P-CHANNEL	Unit
Drain-Source Voltage			VDSS	30	-30	V
Gate-Source Voltage			V _{GSS}	±12	±8	V
Continuous Drain Current N-Channel: VGS = 4.5V P-Channel: VGS = -4.5V	Steady State	TA=25°C	ID	0.9	-0.9	A
		TA=70°C		0.7	-0.7	A
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)			IDM	3.0	-3.0	A

Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Total Power Dissipation (Note 1)	PD	0.3	W
Thermal Resistance, Junction to Ambient (Note 1)	R_{JA}	417	$^{\circ}\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^{\circ}\text{C}$

Notes: 1. Device mounted on 1" × 1" FR-4 PCB with high coverage 2oz. Copper, single sided.

Electrical Characteristics

Q1 N-CHANNEL (@ TA = +25°C, unless otherwise specified.)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS (Note 2)						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BVDSS	30	--	--	V
Zero Gate Voltage Drain Current TJ = +25°C	$V_{DS}=30V, V_{GS}=0V$	IDSS	--	--	1	μA
Gate-Source Leakage	$V_{DS}=0V, V_{GS}= \pm 12V$	IGSS	--	--	± 10	μA
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	VGS(TH)	0.6	0.95	1.3	V
Static Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=0.5A$	RDS(on)	--	300	400	m Ω
	$V_{GS}=2.5V, I_D=0.5A$		--	400	600	
Diode Forward Voltage	$V_{GS} = 0V, I_{SD} = 0.5A$	VSD	--	0.8	1.1	V
DYNAMIC CHARACTERISTICS (Note 3)						
Input Capacitance	$V_{DS} = 10V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	Ciss	--	80	--	pF
Output Capacitance		Coss	--	13	--	
Reverse Transfer Capacitance		Crss	--	10	--	
Total Gate Charge	VDS = 10V, ID = 0.5A	Qg	--	9.4	--	nC
Gate-Source Charge		Qgs	--	1.6	--	
Gate-Drain Charge		Qgd	--	2.0	--	
Turn-On Delay Time	VDD = 10V, VGS = 0.5V, ID=0.5A, RG = 1 Ω	tD(ON)	--	6.7	--	nS
Turn-On Delay Time		tR	--	4.8	--	
Turn-Off Delay Time		tD(OFF)	--	17.5	--	
Turn-Off Fall Time		tF	--	7.4	--	
Body Diode Reverse Recovery Time	IS = 0.5A, dI/dt = 1A/ μ s	tRR	--	7.6	--	
Body Diode Reverse Recovery Charge	IS = 0.5A, dI/dt = 1A/ μ s	QRR	--	0.9	--	nC

Notes: 2. Short duration pulse test used to minimize self-heating effect.

3. Guaranteed by design. Not subject to product testing.

Electrical Characteristics

Q2 P-CHANNEL (@ TA = +25°C, unless otherwise specified.)

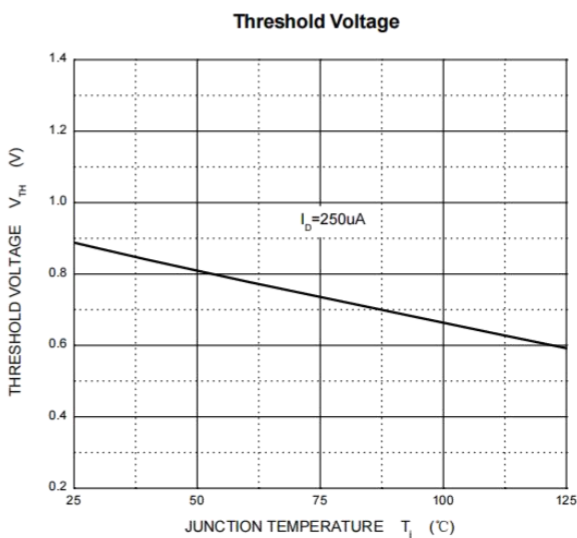
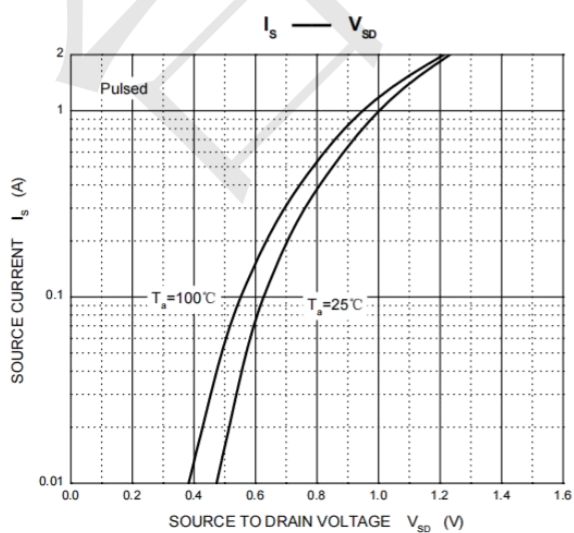
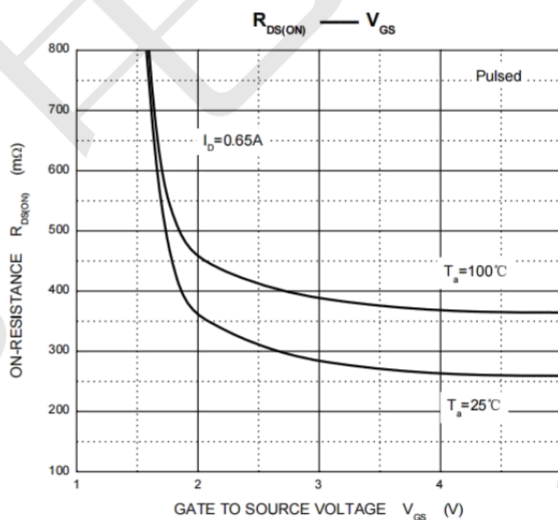
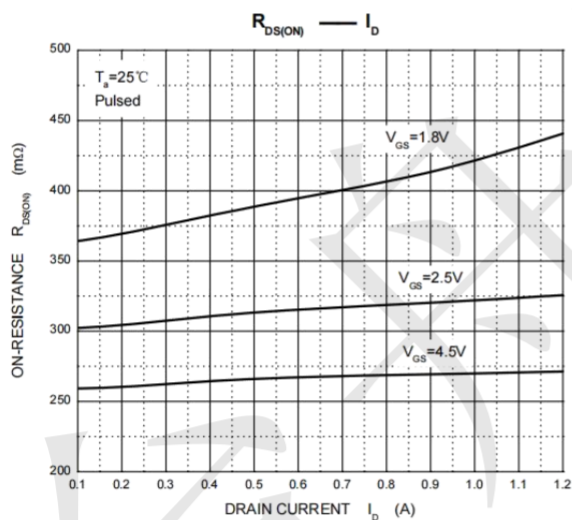
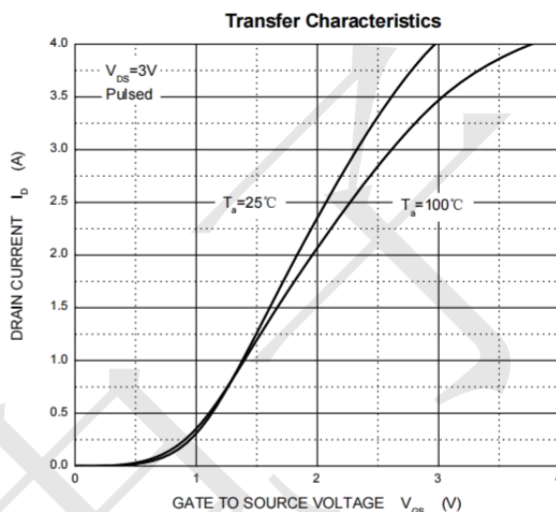
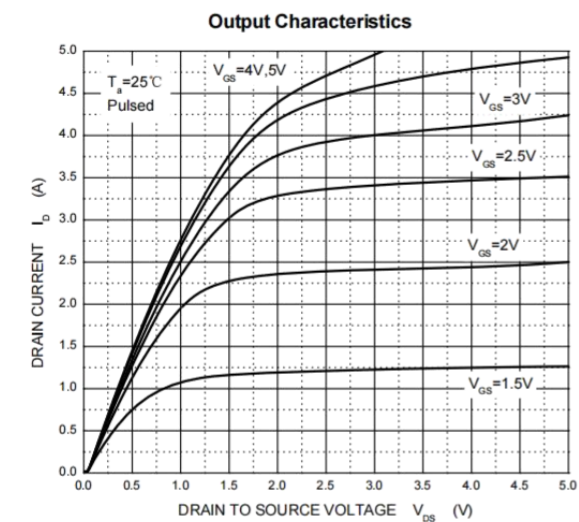
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS (Note 2)						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BVDSS	-30	--	--	V
Zero Gate Voltage Drain Current TJ = +25°C	$V_{DS}=-30V, V_{GS}=0V$	I_{DSS}	--	--	-1	μA
Gate-Source Leakage	$V_{DS}=0V, V_{GS}=\pm 8V$	I_{GSS}	--	--	± 10	μA
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(TH)}$	-0.4	--	-1.3	V
Static Drain-Source On-Resistance	$V_{GS}=-4.5V, I_D=-0.5A$	$R_{DS(on)}$	--	300	400	m Ω
	$V_{GS}=-2.5V, I_D=-0.5A$		--	400	600	
Diode Forward Voltage	$V_{GS}=0V, I_{SD}=-0.5A$	VSD	--	-0.8	-1.1	V
DYNAMIC CHARACTERISTICS (Note 3)						
Input Capacitance	$V_{DS} = -10V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	C_{iss}	--	113	--	pF
Output Capacitance		C_{oss}	--	15	--	
Reverse Transfer Capacitance		C_{rss}	--	10	--	
Total Gate Charge	$V_{DS} = -10V, I_D$ $=-0.5A$	Q_g	--	9.6	--	nC
Gate-Source Charge		Q_{gs}	--	1.8	--	
Gate-Drain Charge		Q_{gd}	--	2.5	--	
Turn-On Delay Time	$V_{DD} = -10V,$ $V_{GS} = -4.5V,$ $I_D=-0.5A, R_G = 1\Omega$	$t_{D(ON)}$	--	9.1	--	nS
Turn-On Delay Time		t_R	--	5.8	--	
Turn-Off Delay Time		$t_{D(OFF)}$	--	32	--	
Turn-Off Fall Time		t_F	--	20	--	
Body Diode Reverse Recovery Time	$I_S = -0.5A, dI/dt = 1A/\mu s$	t_{RR}	--	7.9	--	
Body Diode Reverse Recovery Charge	$I_S = -0.5A, dI/dt = 1A/\mu s$	Q_{RR}	--	1.1	--	nC

Notes: 2. Short duration pulse test used to minimize self-heating effect.

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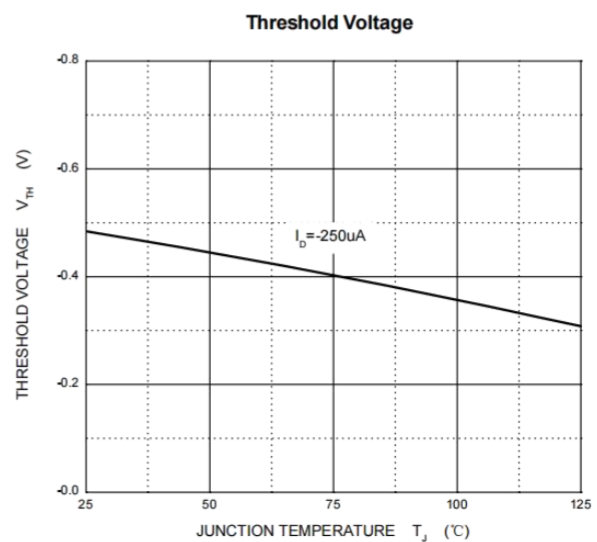
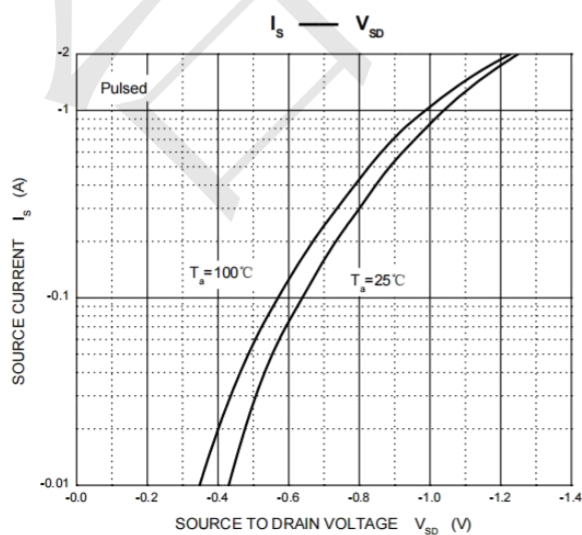
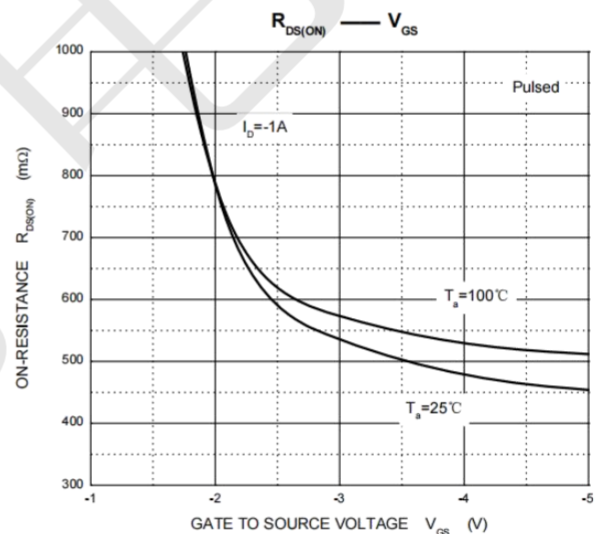
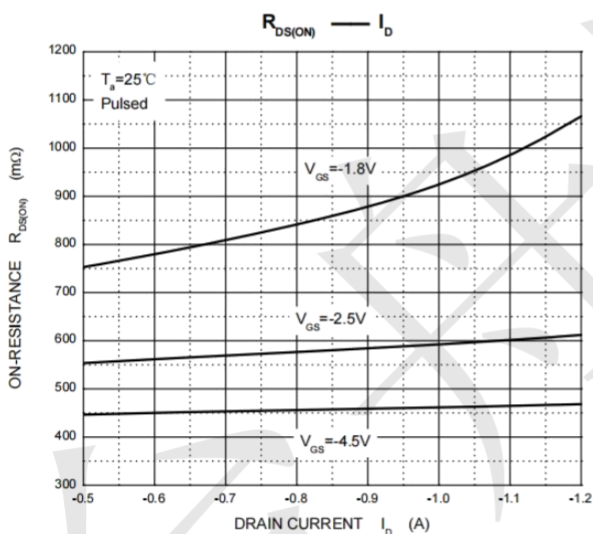
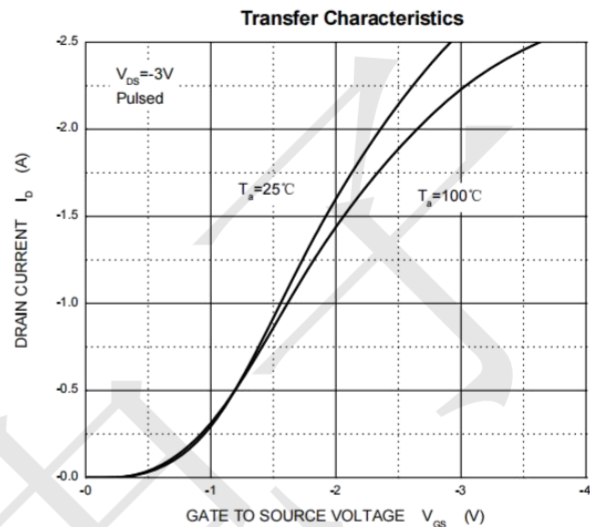
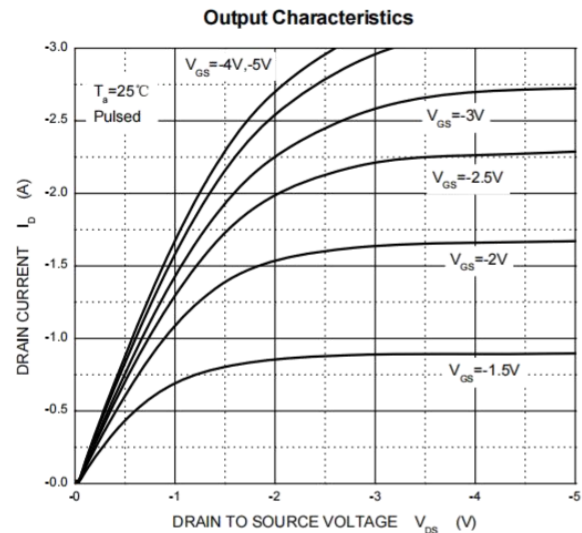
Typical Performance Characteristics

Q1 N-CHANNEL



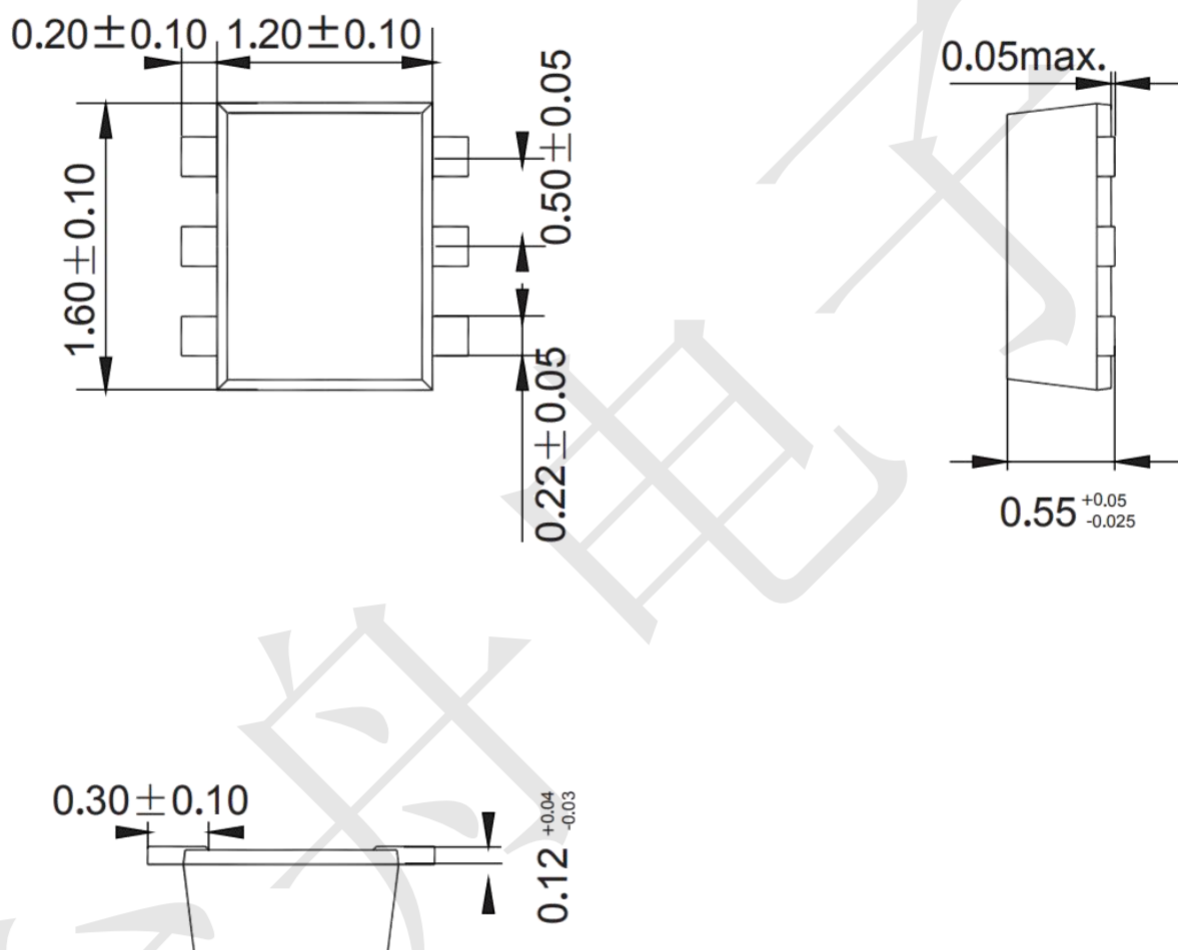
Typical Performance Characteristics

Q2 P-CHANNEL



Package informantion (Unit: mm)

SOT563



Mounting Pad Layout (unit: mm)

