Dual N&P-Channel MOSFET

Features

- Low RDS(on)
- Operated at Low Logic Level Gate Drive
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. “Green” Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 833°C/W Junction to Ambient(Note 2)

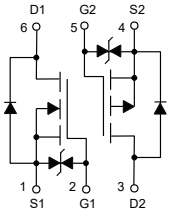
Parameter	Symbol	Rating	Unit
Total Power Dissipation	P_D	150	mW
N-Channel MOSFET			
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Volltage	V_{GS}	±12	V
Continuous Drain Current	I_D	0.75	A
Pulsed Drain Current(Note 3)	I_{DM}	3	A
P-Channel MOSFET			
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Volltage	V_{GS}	±12	V
Continuous Drain Current	I_D	-0.6	A
Pulsed Drain Current(Note 3)	I_{DM}	-3	A

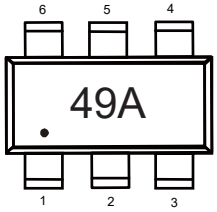
Note: 1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

2. Surface Mounted on FR-4 Board Using Minimum Pad Size.

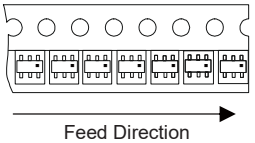
3. Pulse Width Limited by Maximum Junction Temperature.

Internal Structure and Marking Code



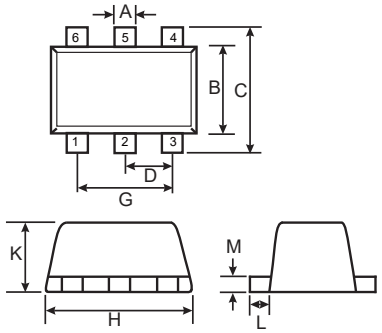


Special packing as below



Feed Direction

SOT-563



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.006	0.011	0.15	0.30	
B	0.043	0.051	1.10	1.30	
C	0.059	0.067	1.50	1.70	
D	0.020		0.50		TYP.
G	0.035	0.043	0.90	1.10	
H	0.059	0.067	1.50	1.70	
K	0.022	0.026	0.55	0.65	
L	0.004	0.011	0.10	0.30	
M	0.004	0.007	0.10	0.18	

N-Channel MOSFET Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	20			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±10V			±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
Gate-Threshold Voltage(Note4)	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.5	0.74	1.1	V
Drain-Source On-Resistance(Note4)	$R_{DS(on)}$	V_{GS}=4.5V, I_D=500mA		210	300	mΩ
		V_{GS}=2.5V, I_D=400mA		300	400	mΩ
		V_{GS}=1.8V, I_D=200mA		520	700	mΩ
Forward transconductance	g_{FS}	V_{DS}=10V, I_D=500mA	0.8			S
Diode Forward Voltage(Note4)	V_{SD}	V_{GS}=0V, I_S=500mA			1.2	V
Dynamic Characteristics(Note5,6)						
Input Capacitance	C_{iss}	V_{DS}=16V,V_{GS}=0V,f=1MHz		33		pF
Output Capacitance	C_{oss}			20		
Reverse Transfer Capacitance	C_{rss}			10		
Total Gate Charge	Q_g	V_{GS}=4.5V,V_{DS}=10V,I_D=1A		800		pC
Gate-Source Charge	Q_{gs}			290		
Gate-Drain Charge	Q_{gd}			160		
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=4.5V,V_{DS}=10V, I_{DS}=0.5A,R_G=10Ω		4		ns
Turn-On Rise Time	t_r			18		
Turn-Off Delay Time	$t_{d(off)}$			11.6		
Turn-Off Fall Time	t_f			24		

P-Channel MOSFET Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-20			V
Gate-Threshold Voltage(Note 4)	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.5	-0.64	-1.1	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-20V, V_{GS} =0V			-1.0	μA
Gate-body Leakage Current	I_{GSS}	V_{GS} =± 10V, V_{DS} =0V			±10	μA
Drain-Source On-Resistance(Note 4)	$R_{DS(on)}$	V_{GS}=-4.5V, I_D=-500mA		0.62	0.85	Ω
		V_{GS}=-2.5V, I_D=-300mA		0.9	1.2	
		V_{GS}=-1.8V, I_D=-200mA		1.4	2.0	
Forward transconductance	g_{FS}	V_{DS}=-10V, I_D=-500mA	0.8			S
Diode Forward Voltage(Note 4)	V_{SD}	V_{GS}=0V, I_S=-500mA			-1.2	V
Dynamic Characteristics(Note 5,6)						
Input Capacitance	C_{iss}	V_{DS}=-16V,V_{GS}=0V, f=1MHz		40		pF
Output Capacitance	C_{oss}			16		
Reverse Transfer Capacitance	C_{rss}			11		
Total Gate Charge	Q_g	V_{GS}=-4.5V,V_{DS}=-10V,I_D=-1A		860		pC
Gate-Source Charge	Q_{gs}			320		
Gate-Drain Charge	Q_{gd}			200		
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=-10V,V_{GS}=-4.5V,I_D=-500mA, R_G=10Ω		3.8		ns
Turn-off Delay Time	$t_{d(off)}$			9.4		
Rise Time	t_r			19		
Fall Time	t_f			23		

Note 4. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.

5. Switching characteristics are independent of operating junction temperature.

6. Guaranteed by Design, Not Subject to Production Testing.

Curve Characteristics(N-Channel)

Fig. 1 - Output Characteristics

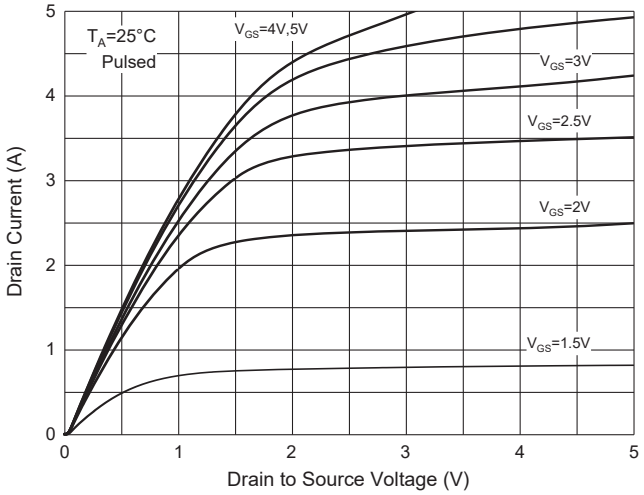


Fig. 2 - Transfer Characteristics

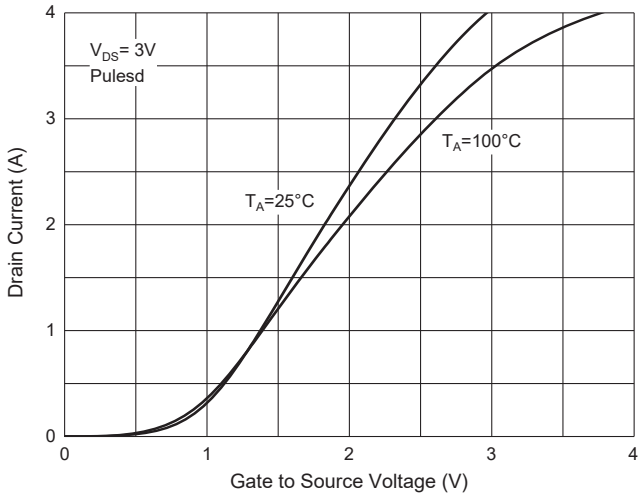


Fig. 3 - $R_{DS(ON)}$—I_D

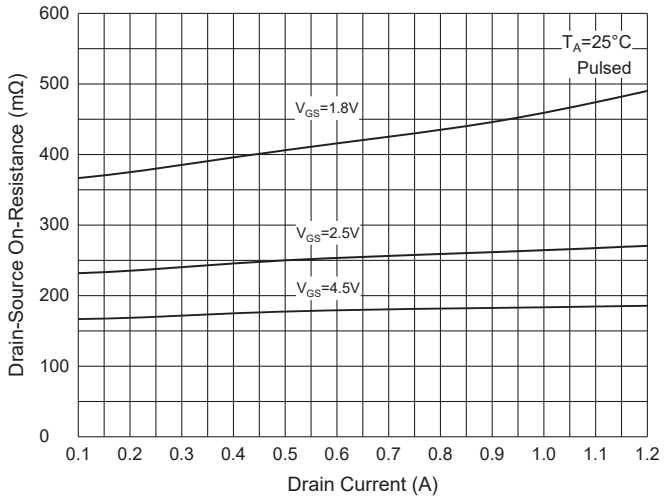


Fig. 4 - $R_{DS(ON)}$—V_{GS}

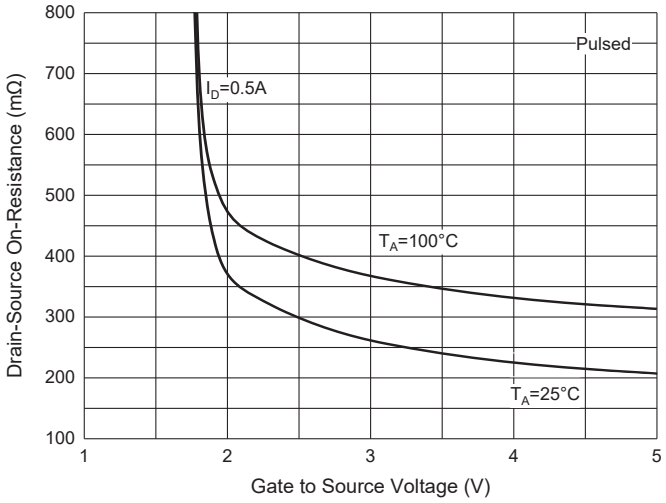


Fig. 5 - I_S—V_{SD}

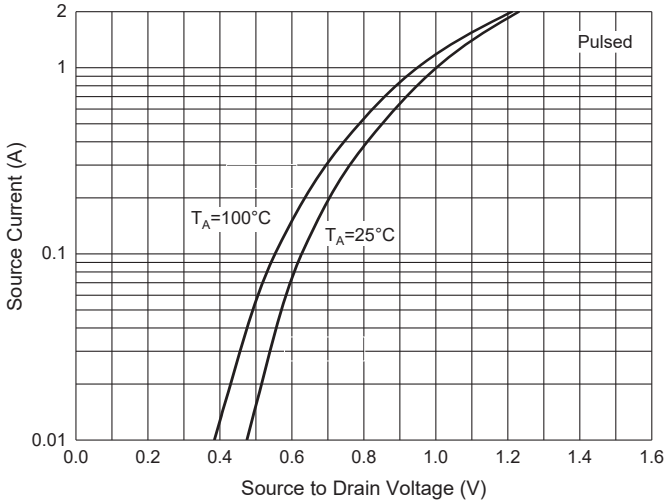
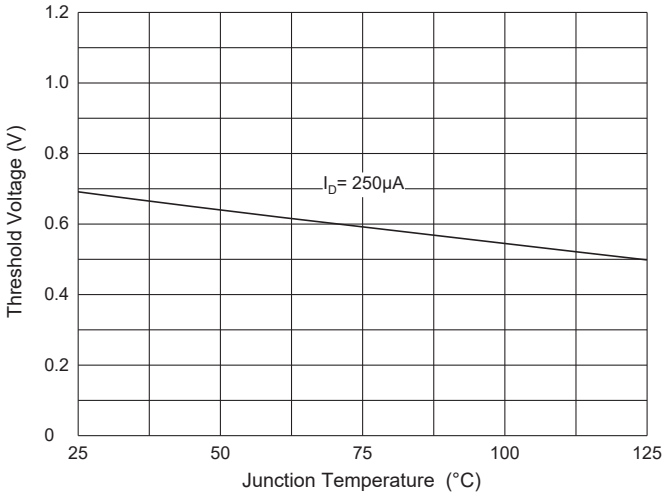


Fig. 6 - Threshold Voltage



Curve Characteristics(N-Channel)

Fig. 7 - Capacitance Characteristics

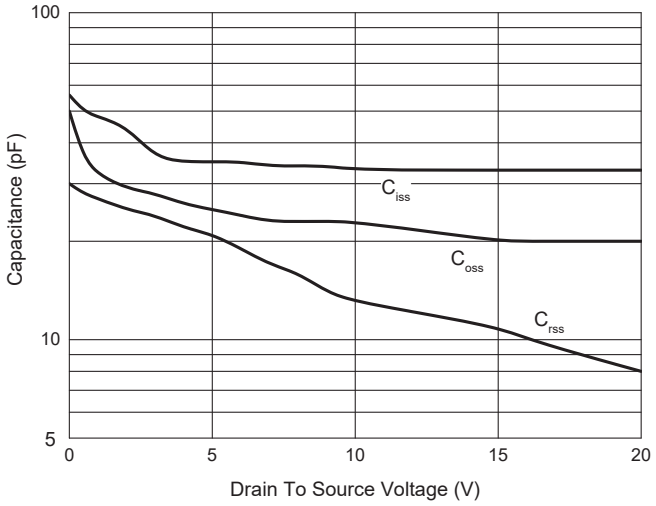
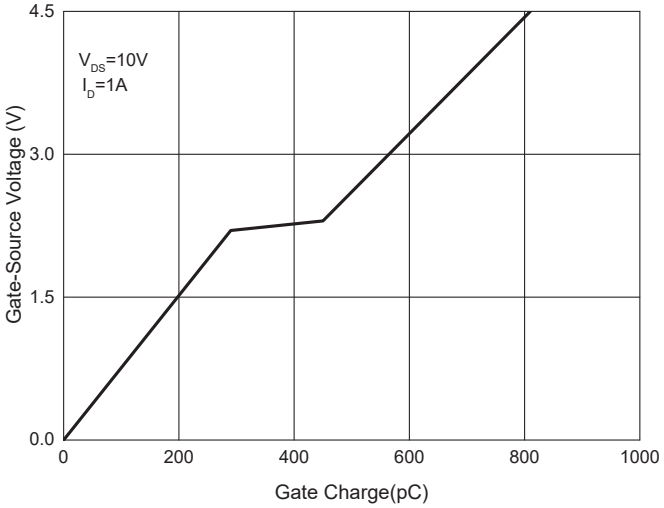


Fig. 8 - Gate Charge



Curve Characteristics(P-Channel)

Fig. 1 - Typical Output Characteristics

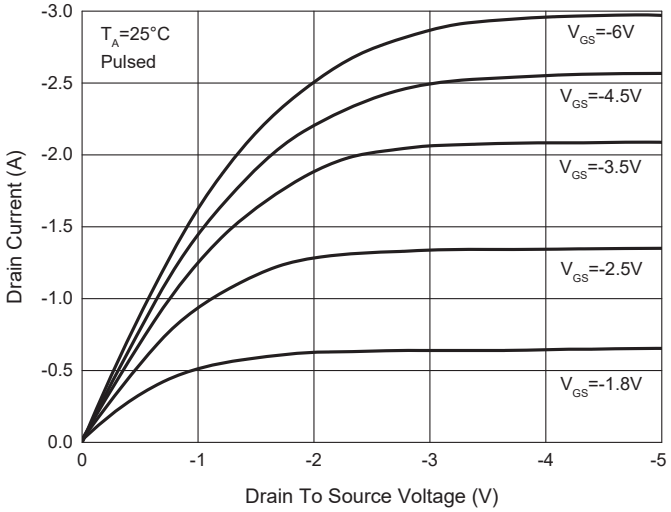


Fig. 2 - Transfer Characteristics

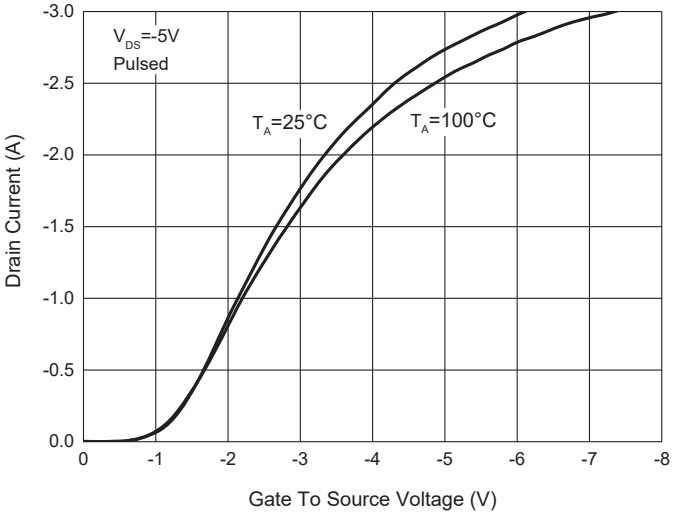


Fig. 3 - $R_{DS(ON)}$—I_D

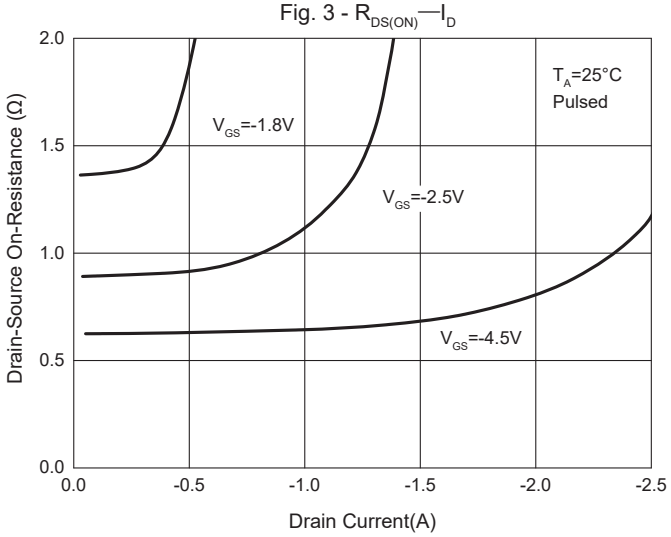


Fig. 4 - $R_{DS(ON)}$—V_{GS}

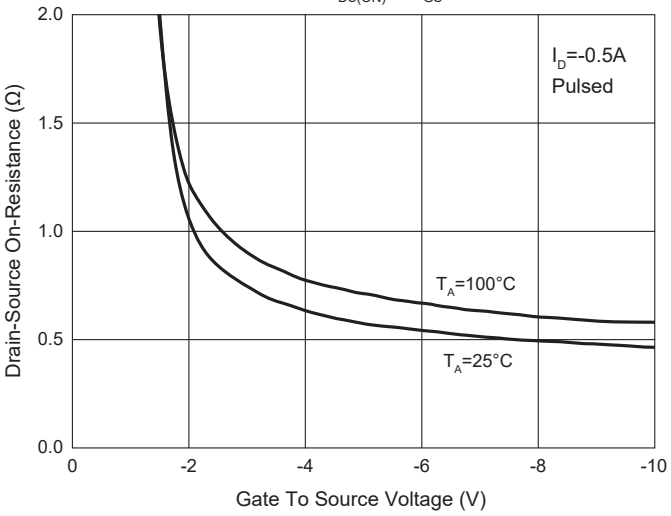


Fig. 5 - I_S—V_{SD}

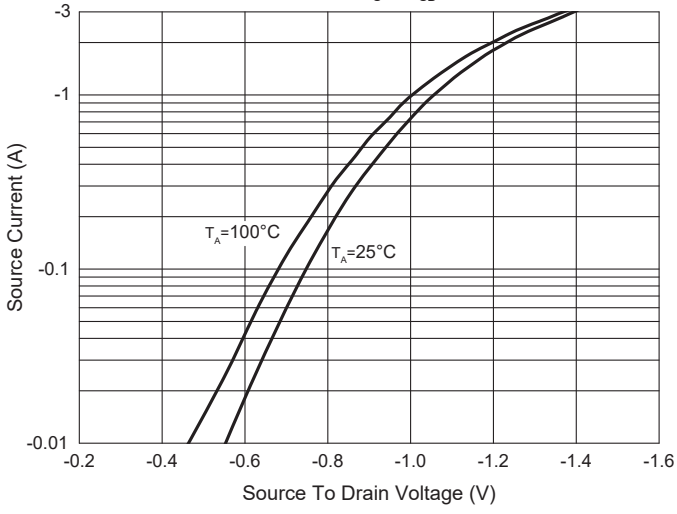
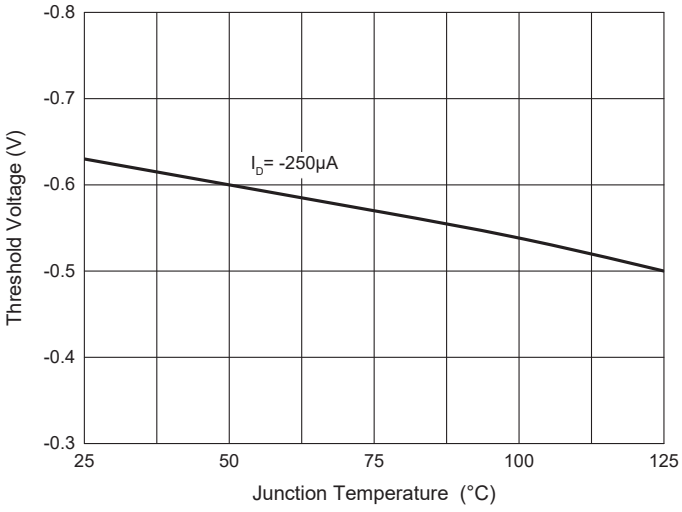


Fig. 6 - Threshold Voltage



Curve Characteristics(P-Channel)

Fig. 7 - Capacitance Characteristics

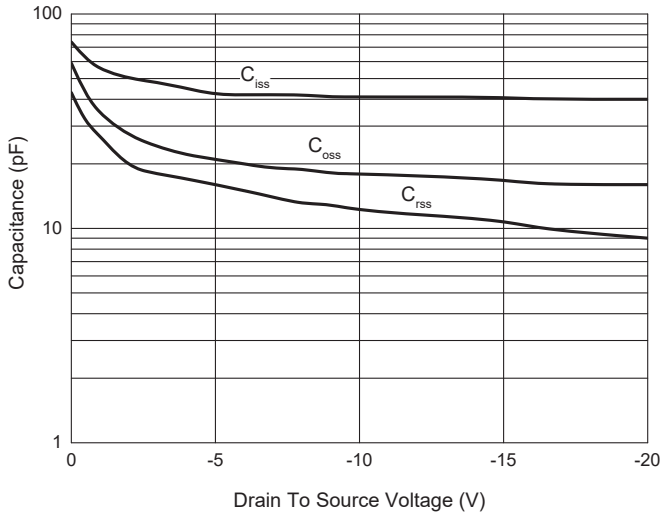
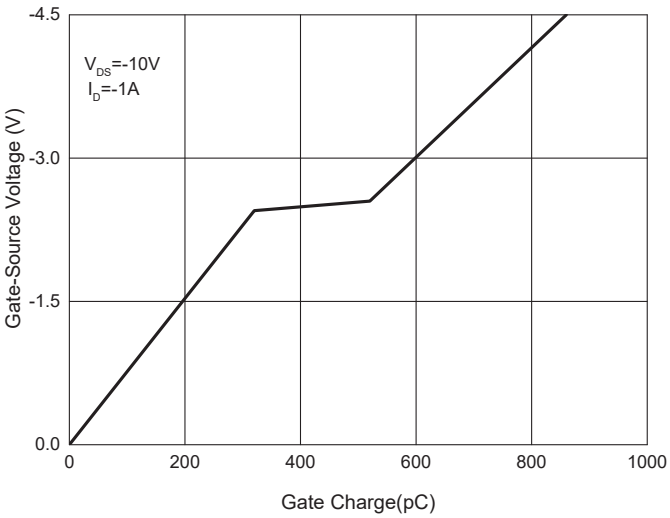


Fig. 8 - Gate Charge



Ordering Information

Device	Packing
Part Number-TPQ2	Tape&Reel: 3Kpcs/Reel

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