

TN06C60PA

N and P-Channel Complementary Power MOSFET

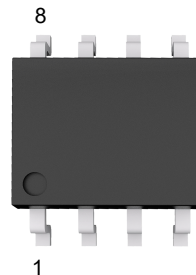
Features

- **N-Channel**
 $V_{DS}=60V, I_D=6A$
 $R_{DS(on)} < 50m\Omega @ V_{GS}=10V$
- **P-Channel**
 $V_{DS}=-60V, I_D=-6A$
 $R_{DS(on)} < 70m\Omega @ V_{GS}=-10V$
- Low On-Resistance
- Advanced Trench Technology
- Fast Switching Speed

Applications

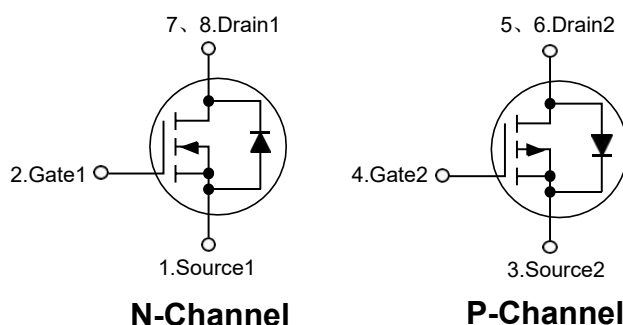
- High Power and Current Handling Capability
- Lead Free Product is Acquired
- Surface Mount Package

SOP-8



Marking Code:06C60

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	60	-60	V
Gate-Source Voltage	V_{GS}	± 20		V
Drain Current-Continuous	I_D	6	-6	A
Drain Current-Pulsed ^{Note1}	I_{DM}	30	-25	A
Maximum Power Dissipation	P_D	2		W
Single pulse avalanche energy ^{Note4}	E_{AS}	16	30	mJ
Junction Temperature	T_J	150		°C
Storage Temperature Range	T_{STG}	-55 to +150		°C

Thermal Characteristics

Thermal Resistance,Junction-to-Ambient ^{Note2}	$R_{\theta JA}$	62.5	°C/W
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N-Channel

Electrical Characteristics

(T_J=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static 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} =60V, V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.6	2.5	V
Drain-Source On-Resistance ^{Note3}	R _{DS(on)}	V _{GS} =10V, I _D =8A	--	39	50	mΩ
		V _{GS} =4.5V, I _D =6A	--	46	70	mΩ
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =5V, I _D =1A	--	4.2	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1MHz	--	830	--	pF
Output Capacitance	C _{oss}		--	44.6	--	pF
Reverse Transfer Capacitance	C _{rss}		--	36	--	pF
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f =1MHz	--	0.65	--	Ω
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, R _L =2.5Ω V _{GS} =10V, R _{GEN} =3Ω	--	5	--	nS
Turn-on Rise Time	t _r		--	2.6	--	nS
Turn-off Delay Time	t _{d(off)}		--	16.1	--	nS
Turn-off Fall Time	t _f		--	2.3	--	nS
Total Gate Charge	Q _g	V _{DS} =30V, I _D =6A, V _{GS} =10V	--	14	--	nC
Gate-Source Charge	Q _{gs}		--	2.9	--	nC
Gate-Drain Charge	Q _{gd}		--	5.2	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	V _{SD}	V _{GS} =0V, I _S =6A	--	--	1.2	V
Diode Forward Current	I _S		--	--	6	A

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, t ≤ 10 sec.

3. Pulse Test: Pulse width ≤ 300μs, duty cycles ≤ 2%.

4. EAS Condition: T_J=25°C, V_{DD}=30V, V_G=10V, L=0.5mH, R_G=25Ω, I_{AS}=8A.

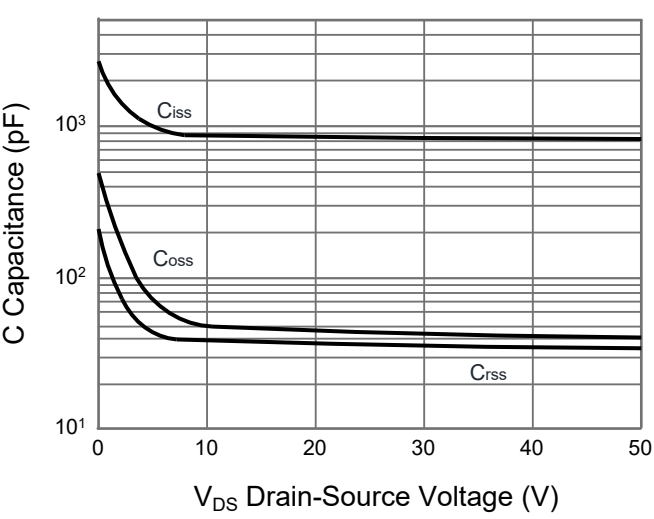
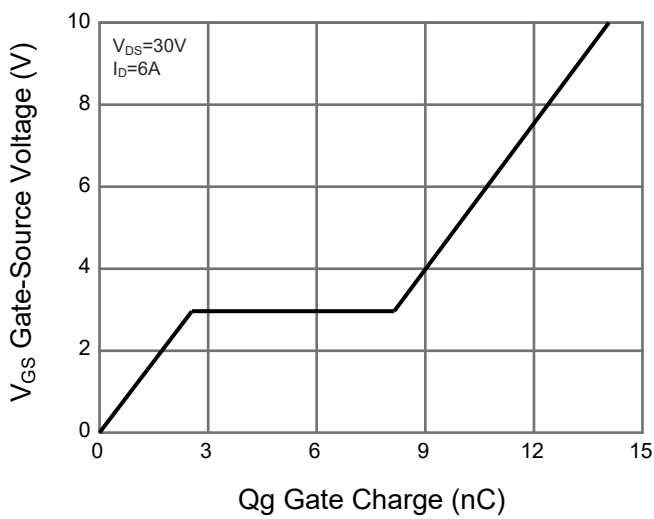
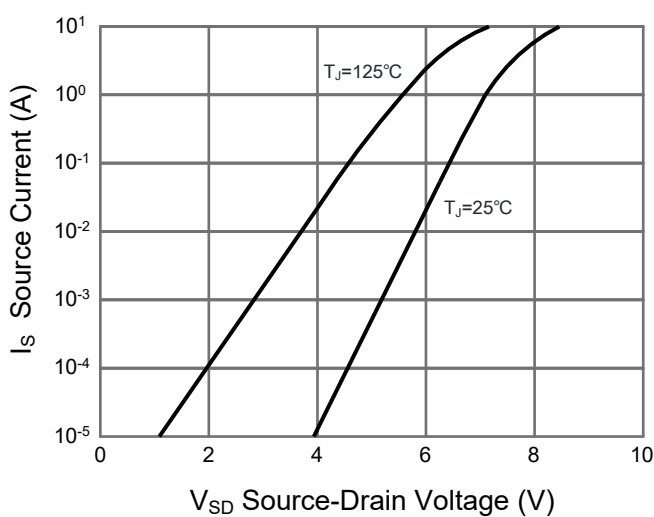
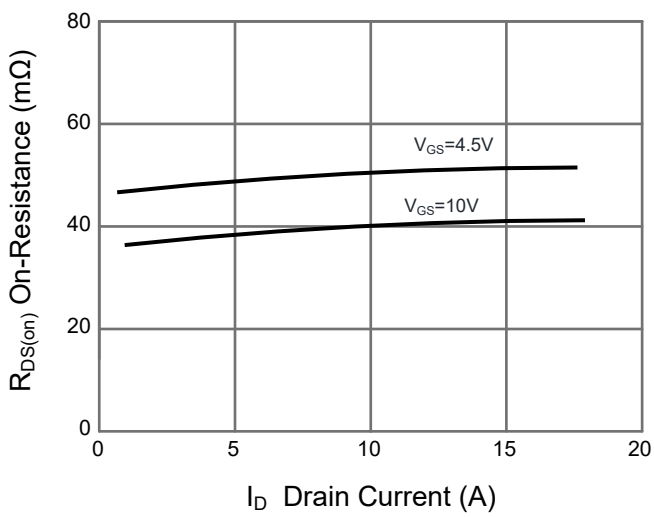
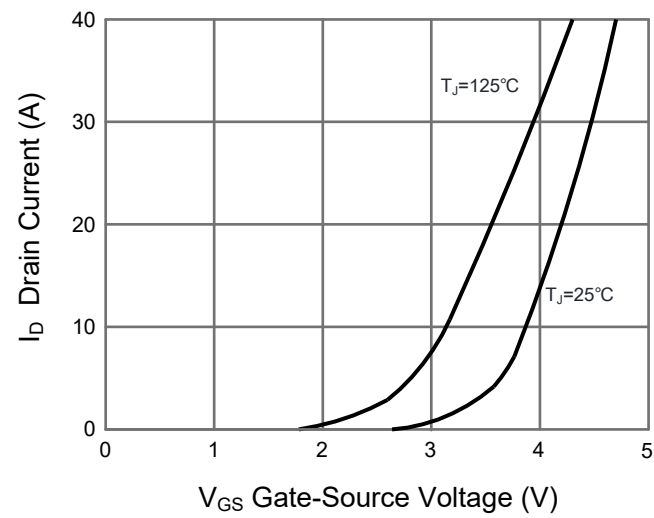
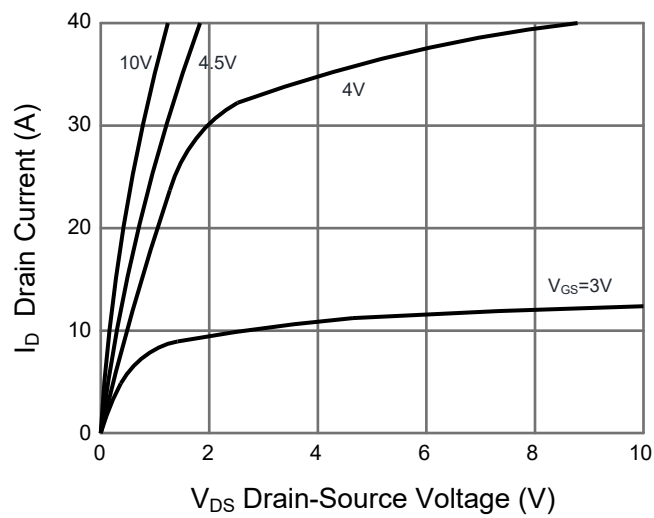
P-Channel**Electrical Characteristics**(T_J=25°C unless otherwise specified)

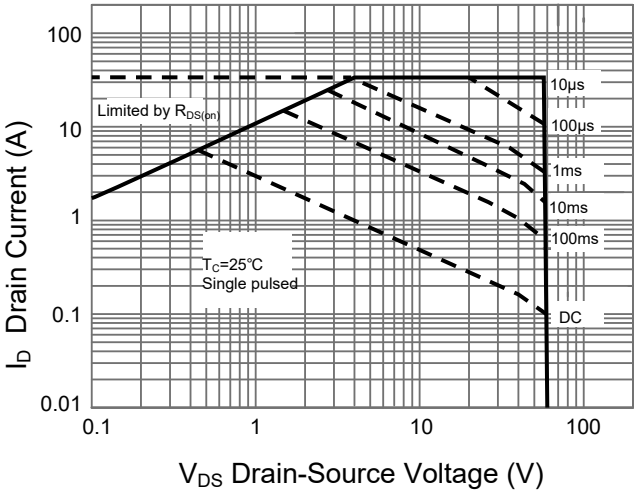
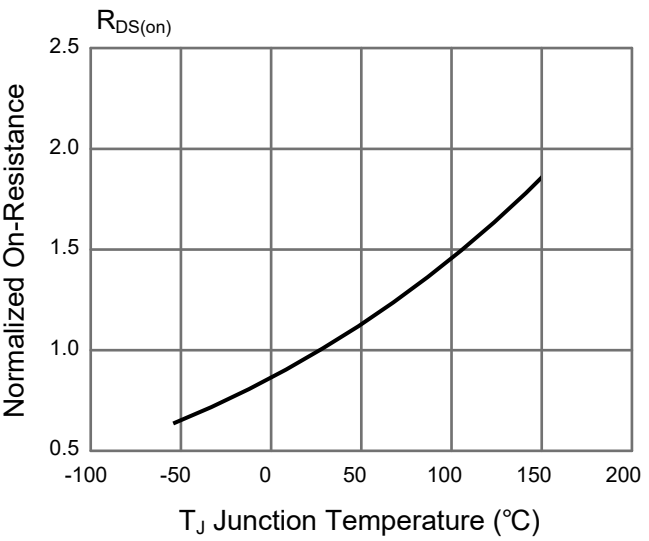
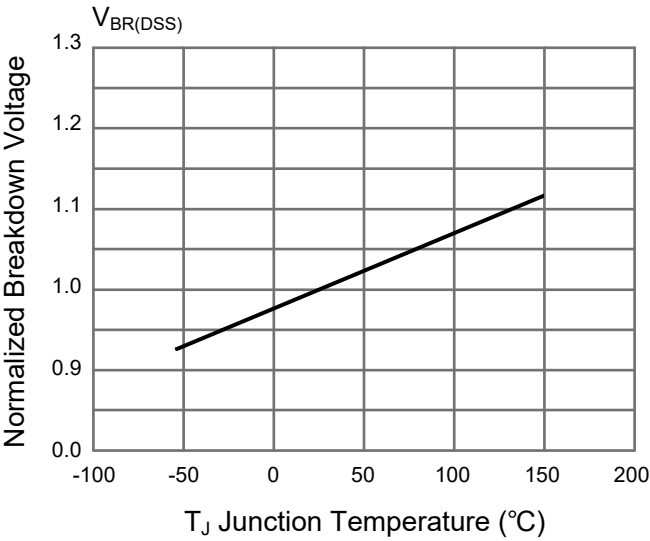
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$-V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	60	--	--	V
Zero Gate Voltage Drain Current	$-I_{DSS}$	$V_{DS}=-60V, V_{GS}=0V$	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Gate Threshold Voltage ^{Note3}	$-V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	1	1.6	2.5	V
Drain-Source On-Resistance ^{Note3}	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-6A$	--	52	70	m Ω
		$V_{GS}=-4.5V, I_D=-6A$	--	60	90	m Ω
Forward Transconductance ^{Note3}	g_{FS}	$V_{DS}=-5V, I_D=-1A$	--	5.5	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-30V, V_{GS}=0V, f=1MHz$	--	1070	--	pF
Output Capacitance	C_{oss}		--	69	--	pF
Reverse Transfer Capacitance	C_{rss}		--	59	--	pF
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	--	3.7	--	Ω
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-30V, R_L=3.75\Omega$ $V_{GS}=-10V, R_{GEN}=3\Omega$	--	8	--	nS
Turn-on Rise Time	t_r		--	4	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	32	--	nS
Turn-off Fall Time	t_f		--	7	--	nS
Total Gate Charge	Q_g	$V_{DS}=-30V, I_D=-8A, V_{GS}=-10V$	--	23.4	--	nC
Gate-Source Charge	Q_{gs}		--	4.1	--	nC
Gate-Drain Charge	Q_{gd}		--	4.8	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	$-V_{SD}$	$V_{GS}=0V, I_S=-6A$	--	--	1.2	V
Diode Forward Current	$-I_S$		--	--	6	A

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. EAS Condition: T_J=25°C, V_{DD}=-30V, V_G=-10V, L=0.5mH, R_G=25 Ω , I_{AS}=-11A.

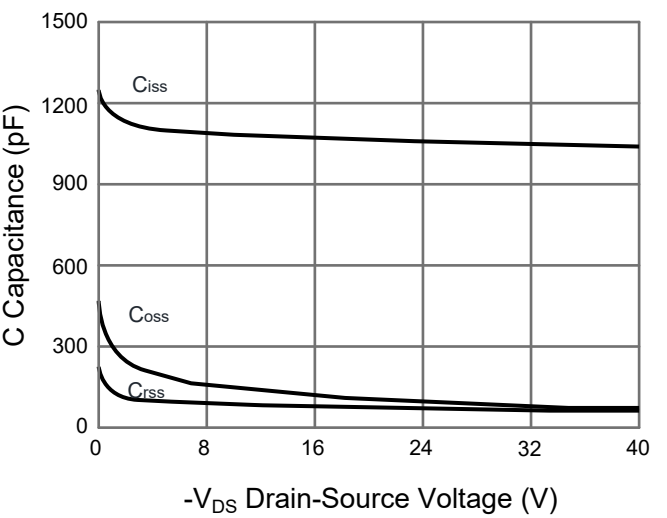
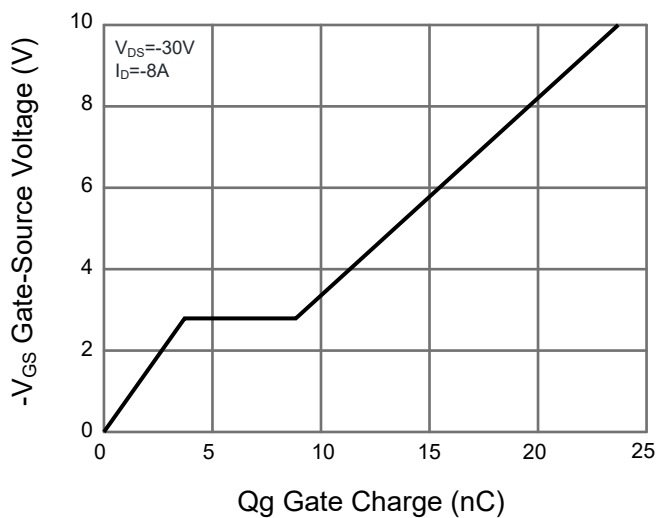
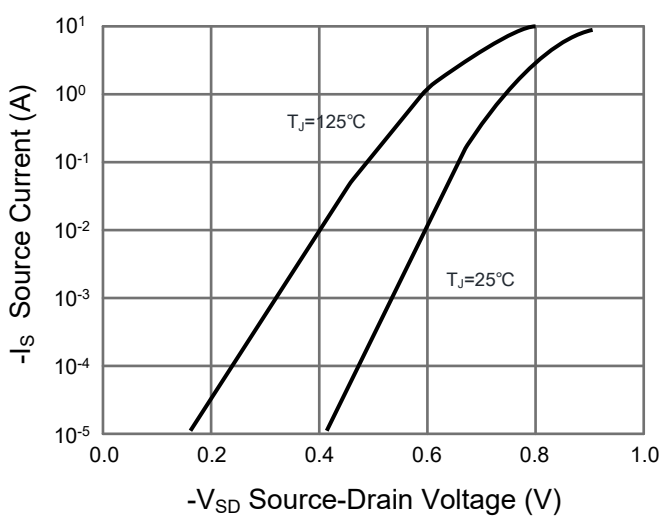
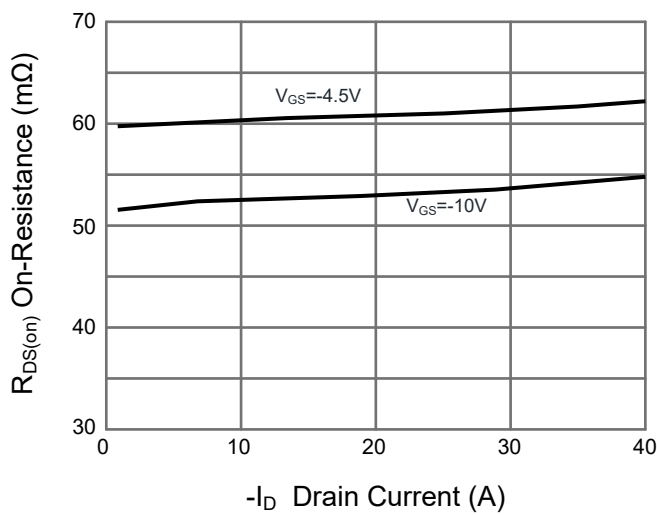
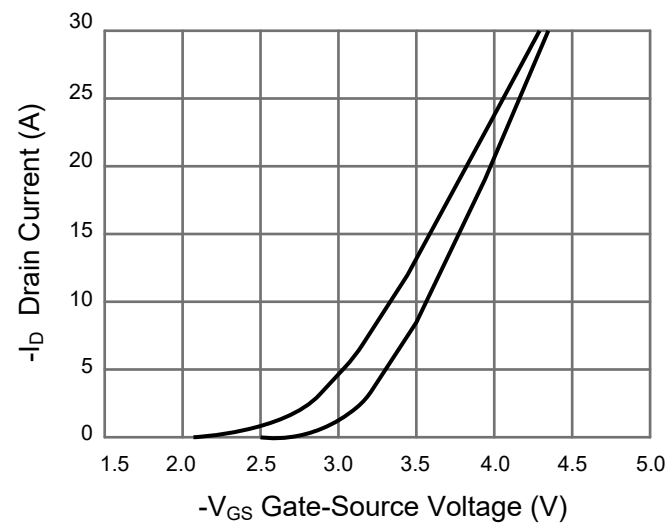
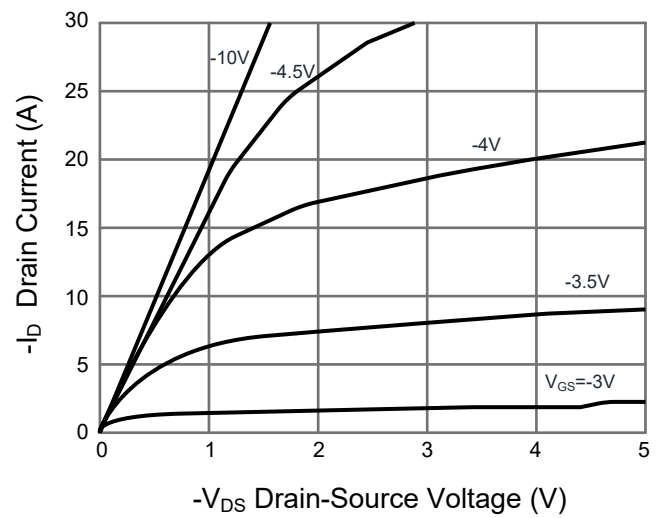
N-Channel

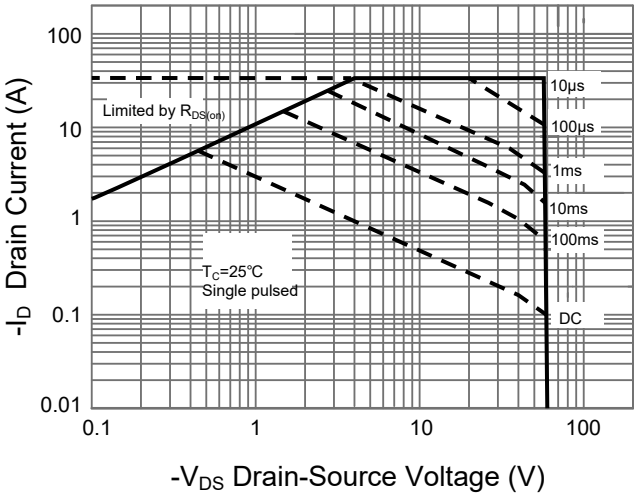
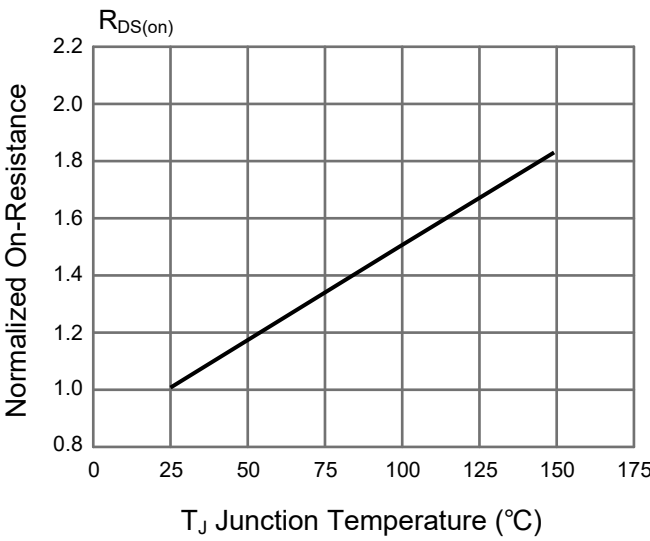
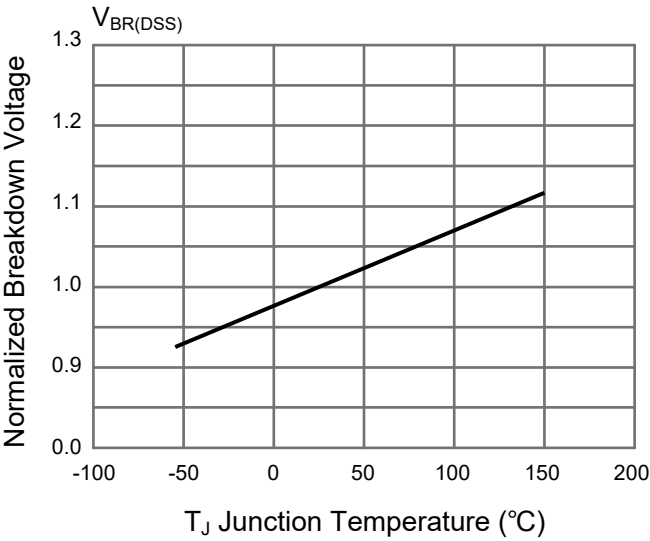
Typical Characteristics Curves





P-Channel
Typical Characteristics Curves

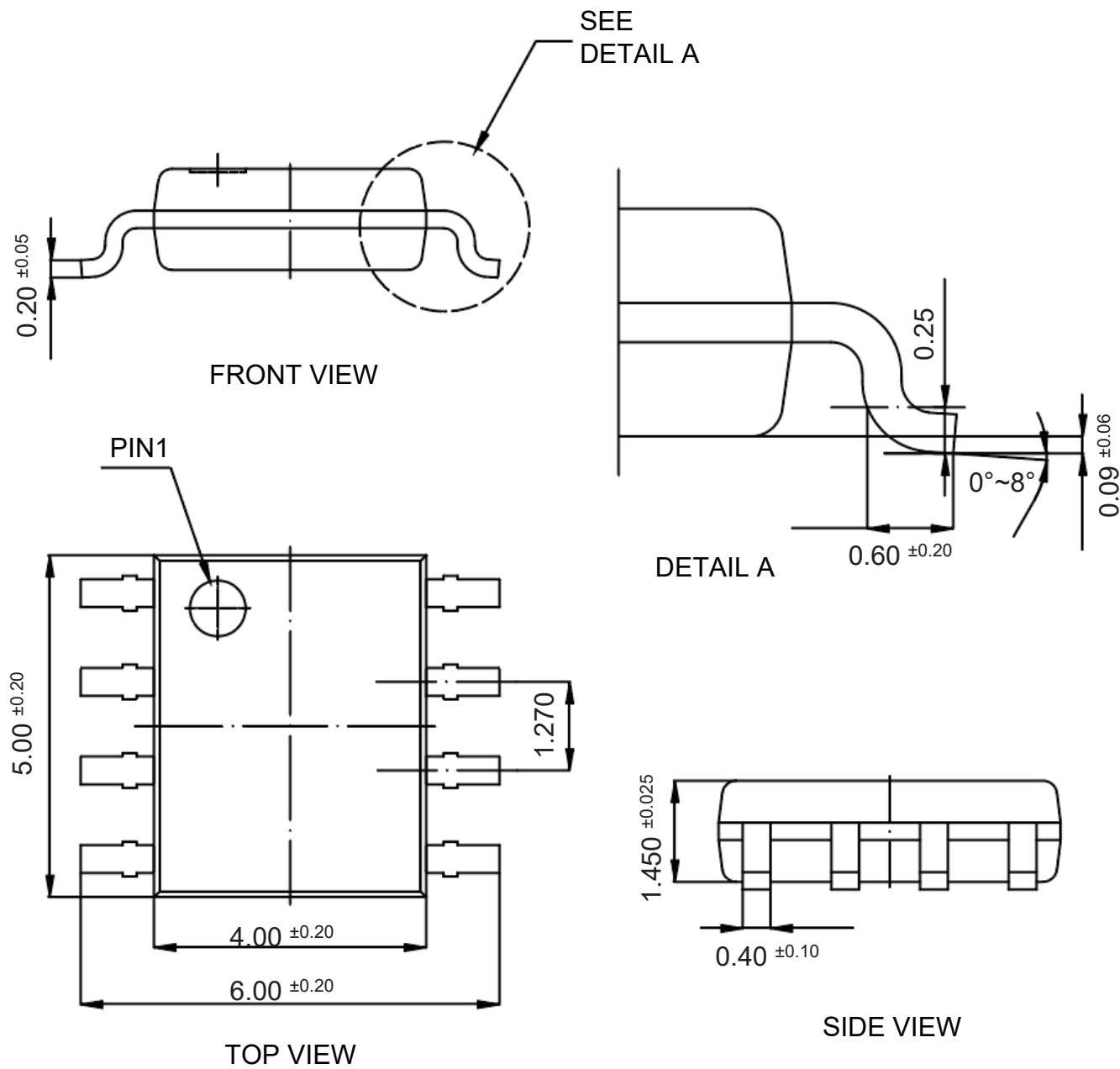




Package Outline

SOP-8

Dimensions in mm



Ordering Information

Device	Package	Shipping
TN06C60PA	SOP-8	4,000PCS/Reel&13inches

Contact Information

TANI website: <http://www.tanisemi.com> Email: tani@tanisemi.com

For additional information, please contact your local Sales Representative.



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