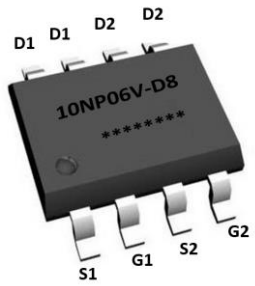
GL10NP06V-D8

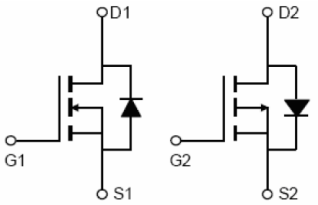
GL Silicon N+P Channel Power MOSFET

General Description：

The GL10NP06V-D8 uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications. The package form is sop-8, which accords with the RoHS standard.

SOP-8 top view





Features：

- **General Features N channel**
  - VDS =60V,ID =10A
  - RDS(ON) <18mΩ @ VGS=10V TYP. 15mΩ
  - RDS(ON) <25mΩ @ VGS=10V TYP. 18mΩ
- **p channel**
  - VDS =-60V,ID =-10A
  - RDS(ON) <75mΩ @ VGS=-10V TYP. 60.0mΩ
  - RDS(ON) <100mΩ @ VGS=-10V TYP. 70.0mΩ

Application

- H-bridge
- Inverters

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage		V_{DS}	60	-60	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current	T_C=25℃	I_D	10	-10	A
	T_C=100℃		7	-7	
Pulsed Drain Current (Note 1)		I_{DM}	40	-40	A
Maximum Power Dissipation	T_C=25℃	P_D	2		W
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 175		℃

Thermal Characteristic

Thermal Resistance,Junction-to-Case(Note 2)	$R_{\theta JC}$	75	℃/W

N-Channel Electrical Characteristics (T_A=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{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
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.0	-	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=10A	-	15	18	mΩ
		V_{GS}=4.5V, I_D=6A	-	18	25	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=10A	8	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=30V,V_{GS}=0V, F=1.0MHz	-	850	-	PF
Output Capacitance	C_{oss}		-	95	-	PF
Reverse Transfer Capacitance	C_{rss}		-	51	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V ,R_L=2.5Ω V_{GS}=10V,R_G=3Ω	-	6.6	-	nS
Turn-on Rise Time	t_r		-	5.8	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	32	-	nS
Turn-Off Fall Time	t_f		-	4	-	nS
Total Gate Charge	Q_g	V_{DS}=30V,I_D=6A, V_{GS}=10V	-	18		nC
Gate-Source Charge	Q_{gs}		-	4.8		nC
Gate-Drain Charge	Q_{gd}		-	6.8		nC

Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=106A	-		1.2	V
Diode Forward Current (Note 2)	I_S		-	-	6	A
Reverse Recovery Time	t_{rr}	TJ = 25°C, IF =10A di/dt = 100A/μs(Note3)	-	58	-	nS
Reverse Recovery Charge	Qrr		-	60	-	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Notes:

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 Cycle ≤ 2%.

4. Guaranteed by design, not subject to production

P-Channel Electrical Characteristics (T_C=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{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
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-1.0	-	-3.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-10A	-	60	75	mΩ
		V_{GS}=-4.5V, I_D=-6A	-	70	100	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-10A	6	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-30V,V_{GS}=0V,	-	960	-	PF
Output Capacitance	C_{oss}		-	86	-	PF

Reverse Transfer Capacitance	C_{rss}	F=1.0MHz	-	38	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-30V ,R_L=2.5Ω V_{GS}=-10V,R_G=3Ω	-	9	-	nS
Turn-on Rise Time	t_r		-	10	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	25	-	nS
Turn-Off Fall Time	t_f		-	11	-	nS
Total Gate Charge	Q_g	V_{DS}=-30V,I_D=-6A, V_{GS}=10V	-	15.8		nC
Gate-Source Charge	Q_{gs}		-	3		nC
Gate-Drain Charge	Q_{gd}		-	3.5		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-10A	-		-1.2	V
Diode Forward Current (Note 2)	I_S		-	-	-6	A
Reverse Recovery Time	t_{rr}	TJ = 25°C, IF =-10A di/dt = 100A/μs(Note3)	-	58	-	nS
Reverse Recovery Charge	Qrr		-	60	-	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

N-Channel Typical Electrical and Thermal Characteristics (Curves)

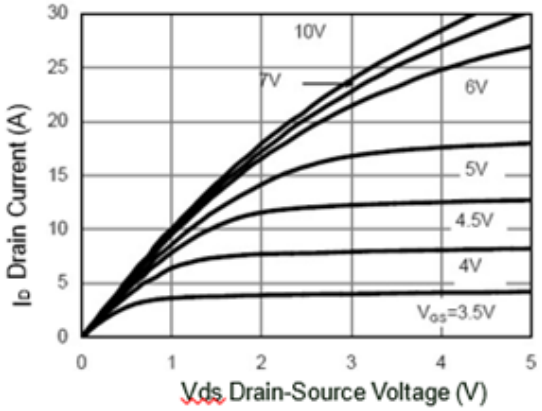


Figure 1 Output Characteristics

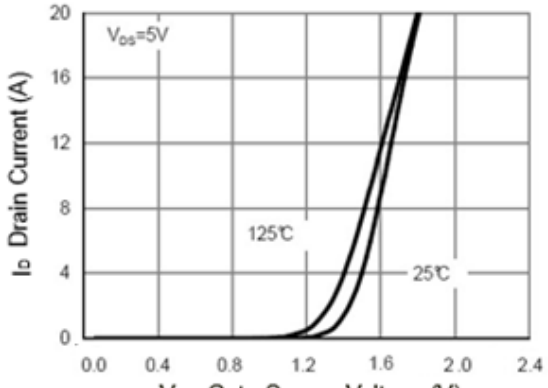


Figure 2 Transfer Characteristics

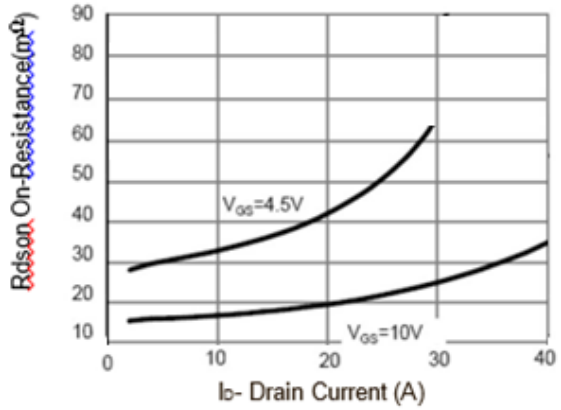


Figure 3 Rdson- Drain Current

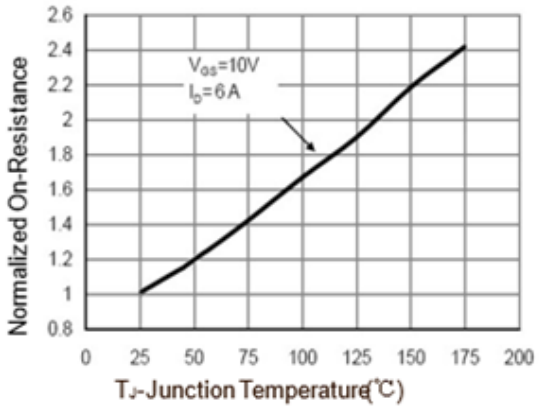


Figure 4 Rdson-Junction Temperature

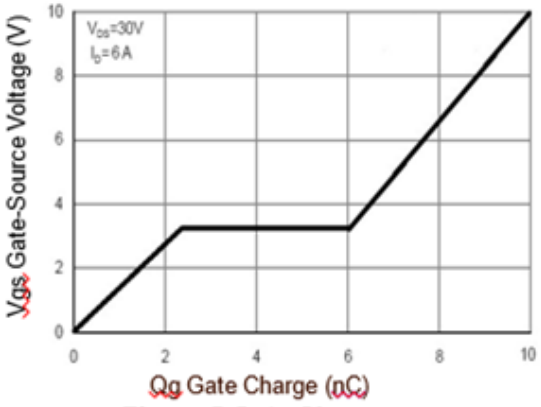


Figure 5 Gate Charge

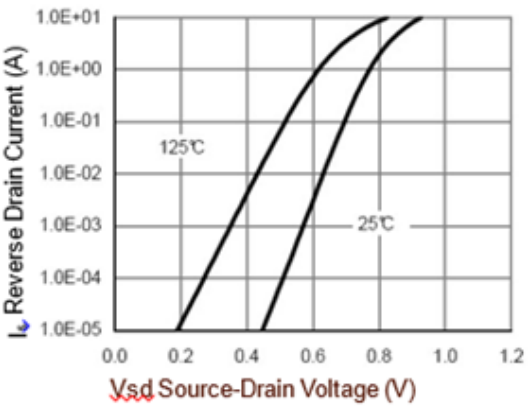


Figure 6 Source- Drain Diode Forward

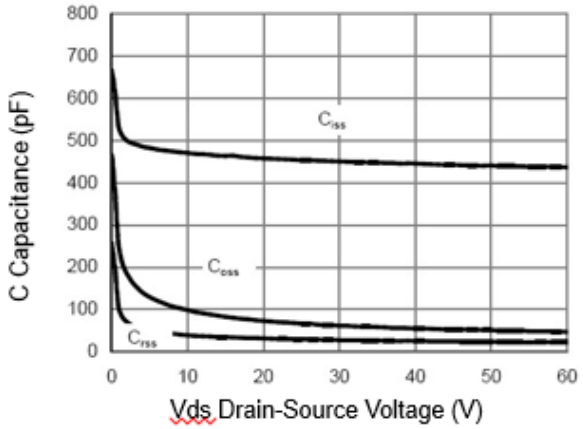


Figure 7 Capacitance vs Vds

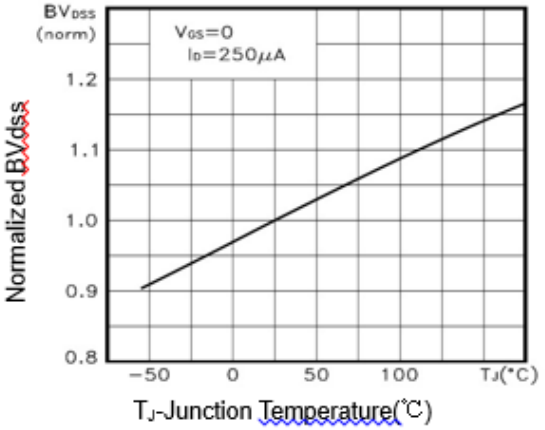


Figure 9 BV_{DSS} vs Junction Temperature

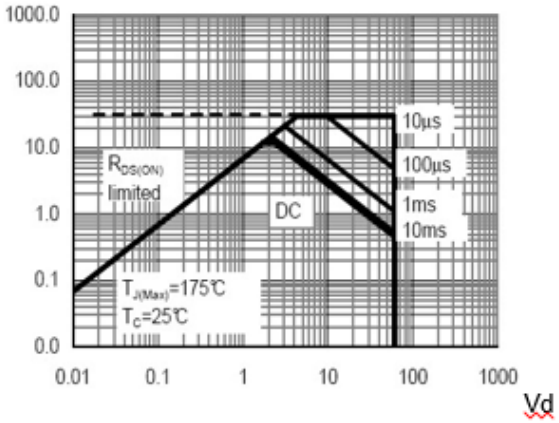


Figure 8 Safe Operation Area

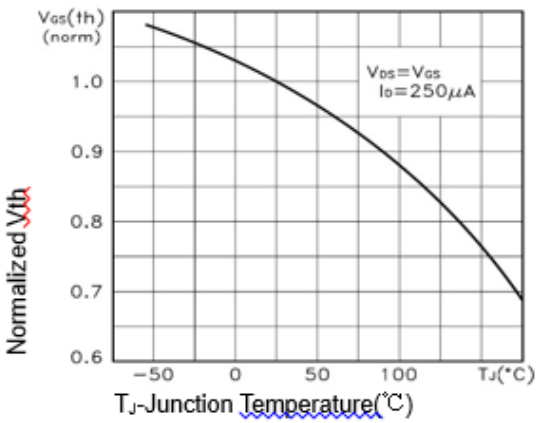
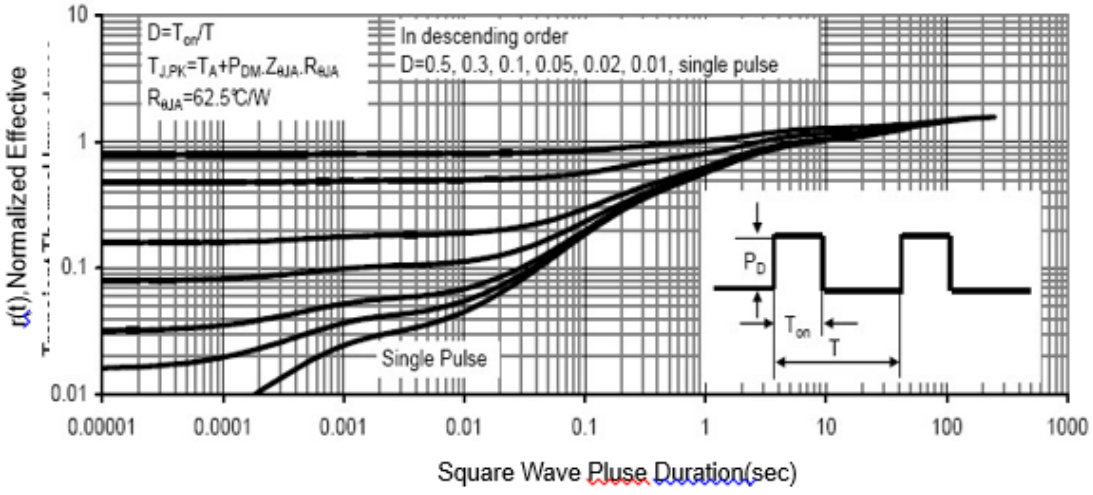


Figure 10 $V_{GS(th)}$ vs Junction Temperature



P-Channel Typical Electrical and Thermal Characteristics (Curves)

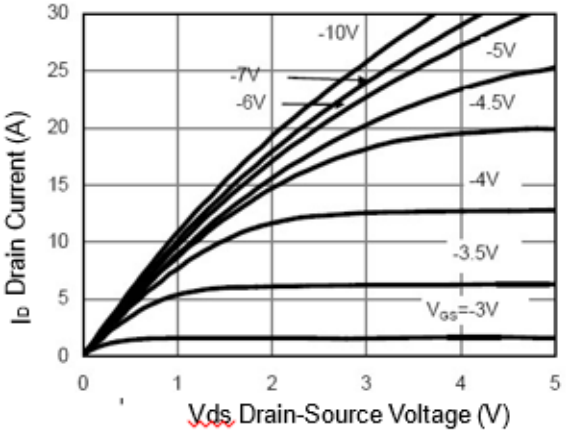


Figure 1 Output Characteristics

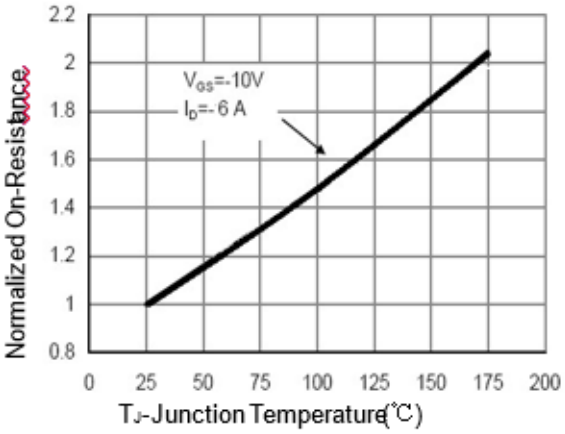


Figure 4 Rdson-Junction Temperature

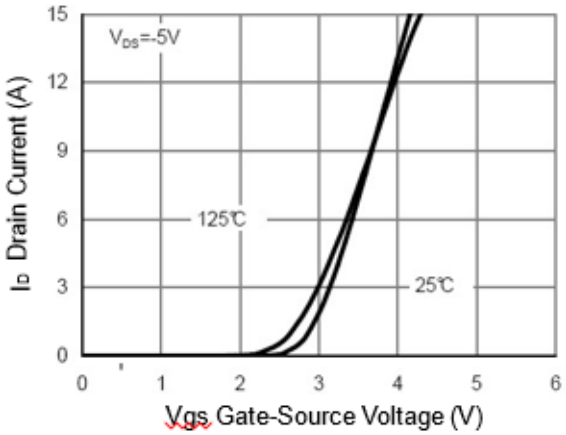


Figure 2 Transfer Characteristics

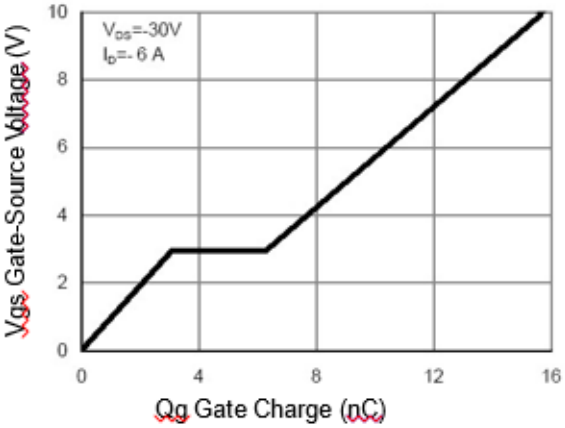


Figure 5 Gate Charge

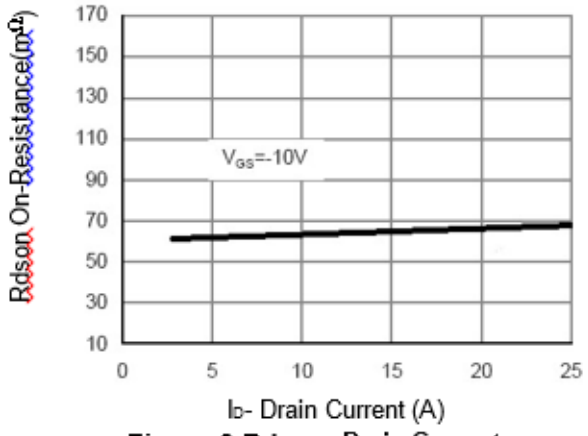


Figure 3 Rdson- Drain Current

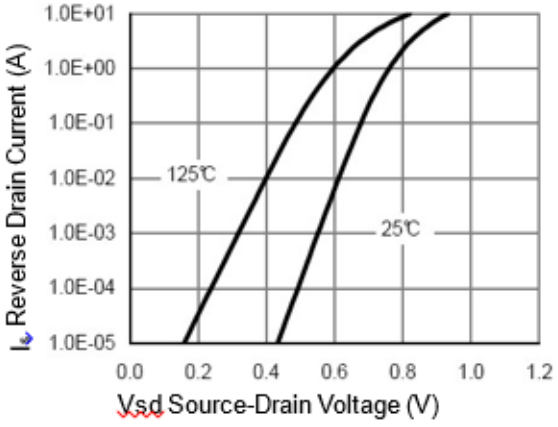


Figure 6 Source- Drain Diode Forward

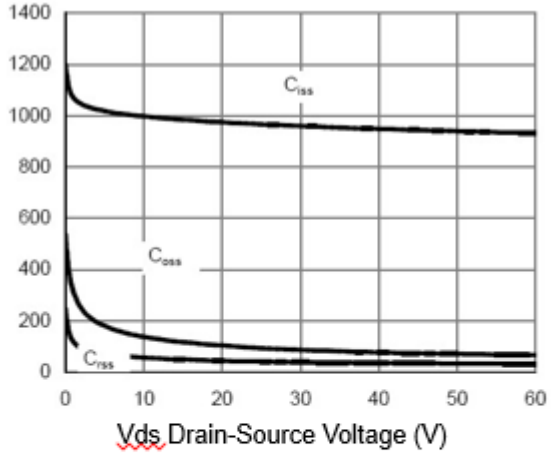


Figure 7 Capacitance vs Vds

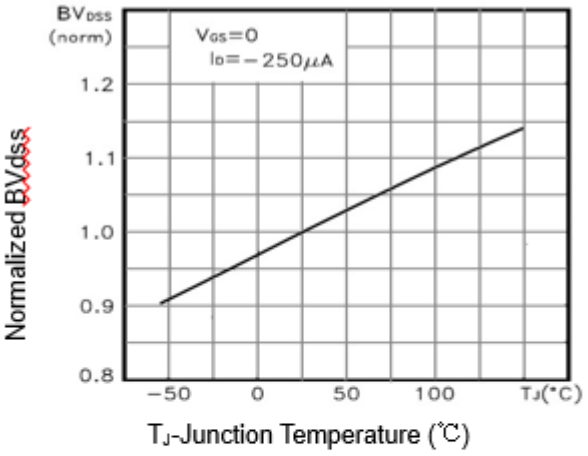


Figure 9 BV_{DSS} vs Junction Temperatur

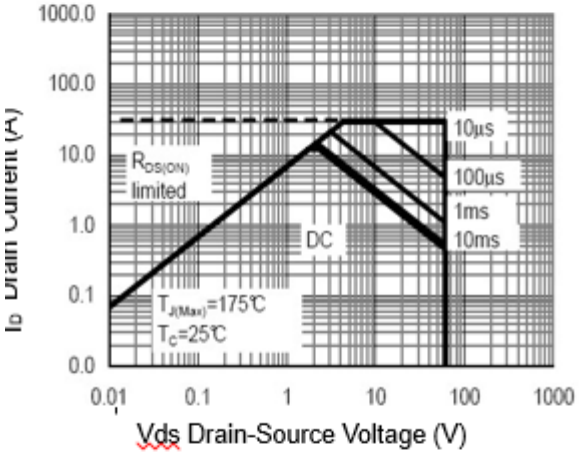


Figure 8 Safe Operation Area

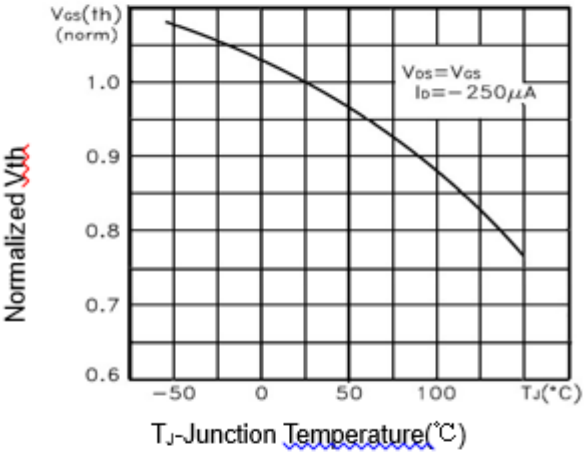


Figure 10 $V_{GS(th)}$ vs Junction Temperatur

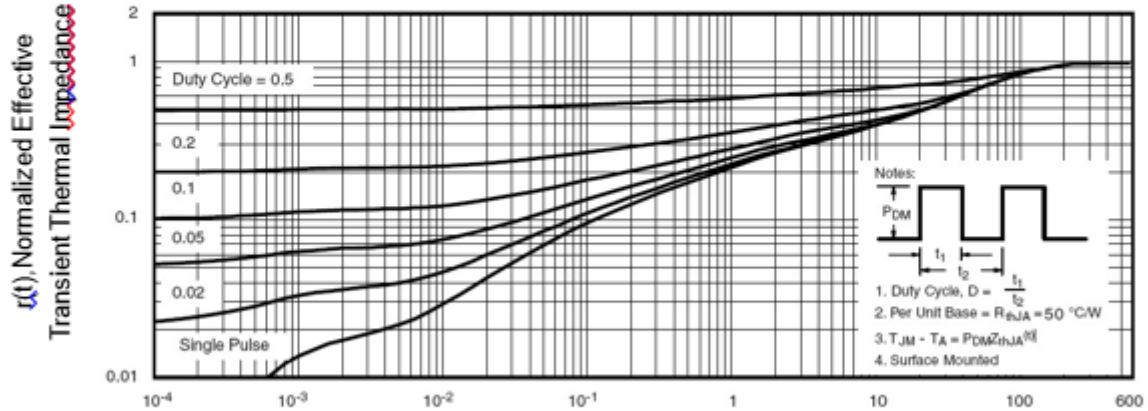


Figure 11 Normalized Maximum Transient Thermal Impedance