



100V N-Channel MOSFETs

General Description

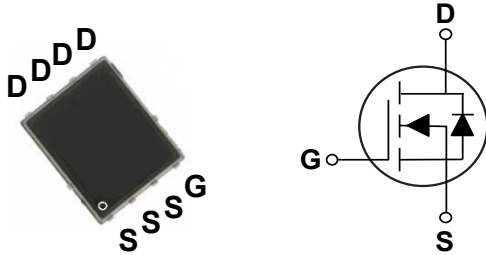
These N-Channel enhancement mode power field effect transistors are using SGT MOSFET technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

BV_{DSS}	R_{DS(ON)}	I_D
100 V	6 mΩ	110 A

Features

- $R_{DS(ON)} \leq 6m\Omega @ V_{GS}=10V$
- Fast Switching
- Improved dv/dt Capability
- Green Device Available

PPAK5X6 Pin Configuration



Applications

- DC/DC Converter
- LED Backlighting
- Power Management Switches

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current - Continuous	110	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	380	A
EAS	Single Pulse Avalanche Energy (NOTE 2)	205	mJ
P_D	Power Dissipation ($T_c=25^\circ\text{C}$)	113.6	W
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
Marking Code		NM6P0	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	58	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	1.1	$^\circ\text{C/W}$



Electrical Characteristics (T_J=25°C, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V, V _{GS} =0V	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =20A	---	---	6	mΩ
		V _{GS} =4.5V, I _D =15A	---	---	9	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.2	---	2.5	V

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _D =20A	---	75	---	nC
Q _{gs}	Gate-Source Charge		---	17	---	
Q _{gd}	Gate-Drain Charge		---	13	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =50V, V _{GS} =10V, R _G =3Ω, I _D =20A	---	15.4	---	nS
T _r	Rise Time		---	13	---	
T _{d(off)}	Turn-Off Delay Time		---	34	---	
T _f	Fall Time		---	6.2	---	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, F=1MHz	---	4400	---	pF
C _{oss}	Output Capacitance		---	645	---	
C _{rss}	Reverse Transfer Capacitance		---	20	---	
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	---	1.7	---	Ω

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	95	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =20A	---	---	1.2	V

NOTES :

1. Repetitive rating; pulse width limited by max. junction temperature.
2. V_{DD}=50V, V_{GS}=10V, L=0.4mH, I_{AS}=32A.
3. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.



Characteristics Curves

FIG. 1-Forward Characteristics of Body Diode

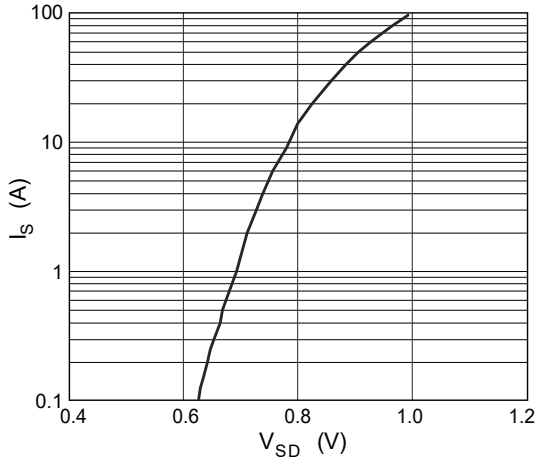


FIG. 2-Power Dissipation

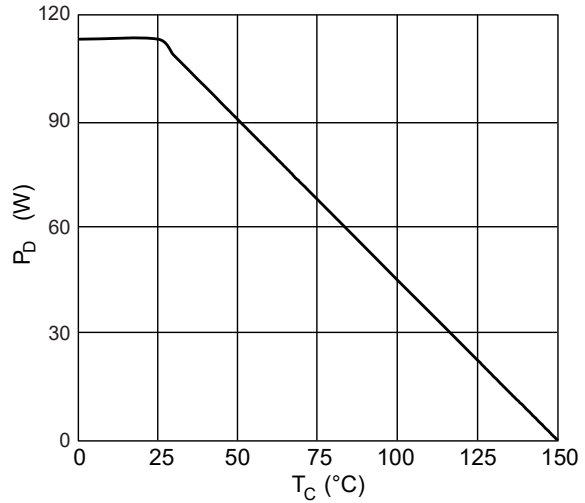


FIG. 3-Normalized $R_{DS(on)}$ vs T_J

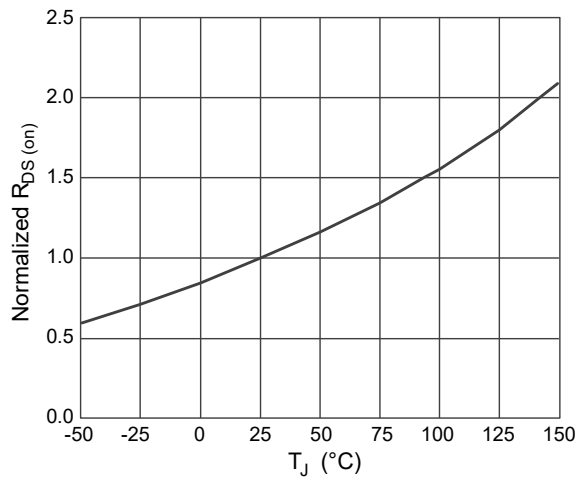


FIG. 4-Gate Charge Characteristics

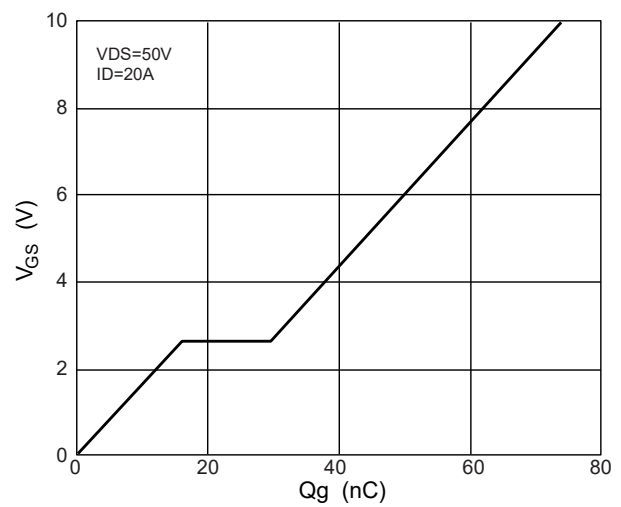


FIG. 5-Safe Operation Area

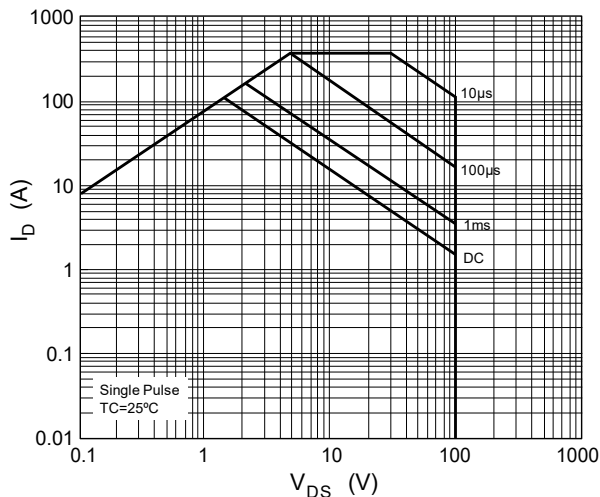
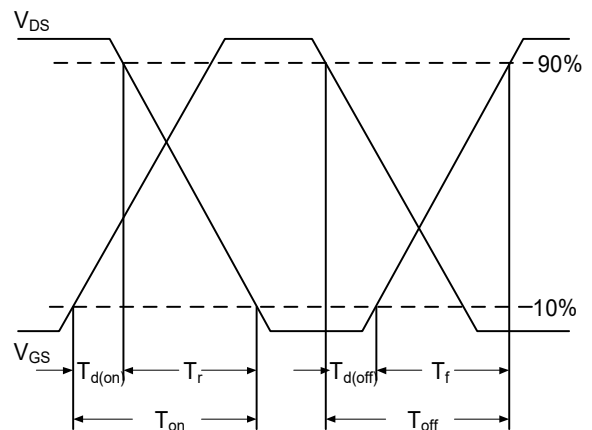
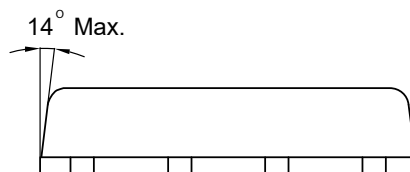
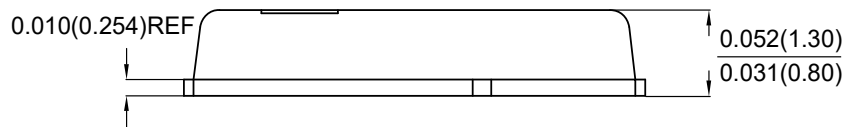
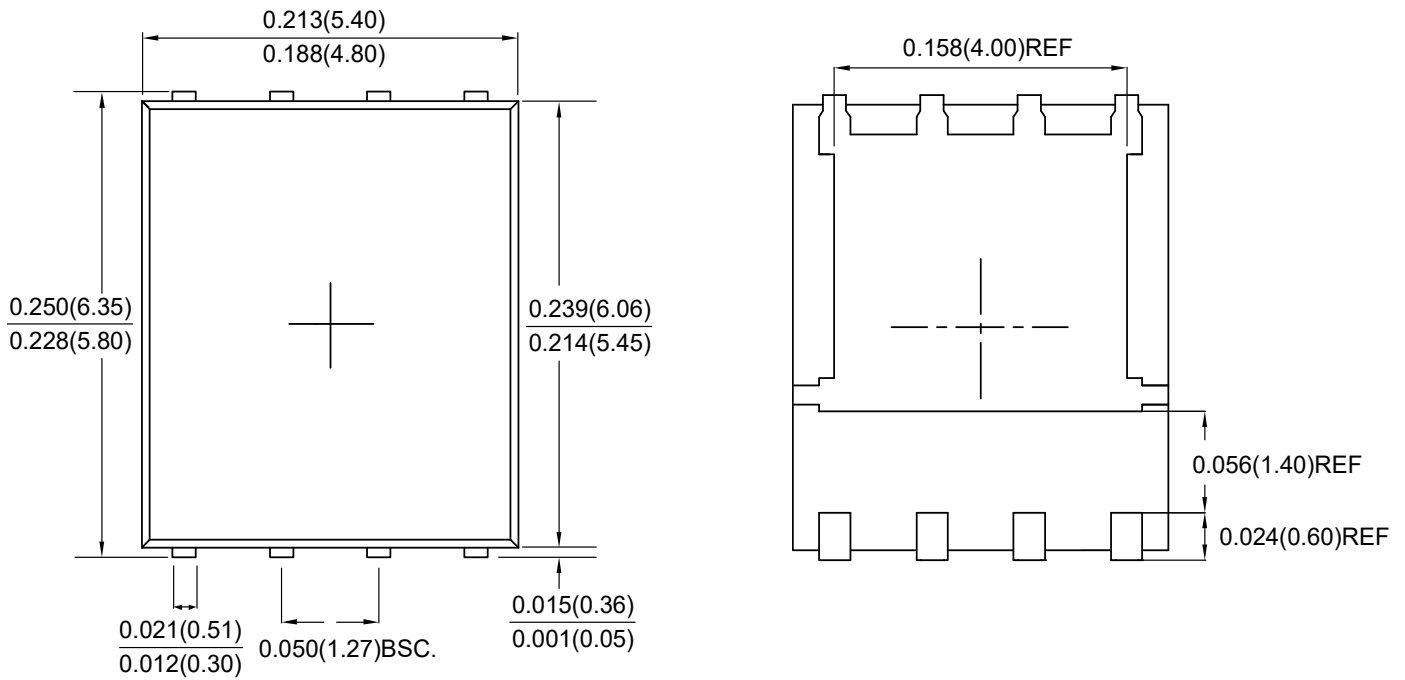


FIG. 6 - Switching Time Waveform





Package Outline Dimensions



PPAK5X6

Dimensions in inches and (millimeters)



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