



30V N-Channel MOSFETs

General Description

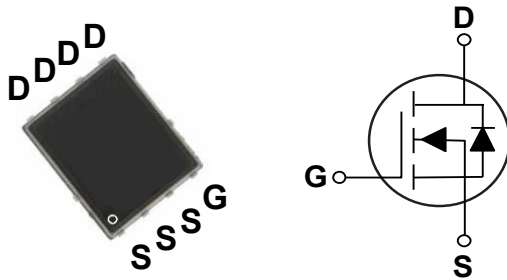
These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BV _{DSS}	R _{DS(ON)}	I _D
30 V	0.85 mΩ	100 A

Features

- $R_{DS(ON)} \leq 0.85m\Omega @ V_{GS}=10V$
- Fast Switching
- Improved dv/dt Capability
- Green Device Available

PPAK5X6 Pin Configuration



Applications

- DC-DC Converter
- Load Switch

Absolute Maximum Ratings T_J=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current - Continuous (T _C =25°C)	100	A
I _{DM}	Drain Current - Pulsed (NOTE 1)	650	A
EAS	Single Pulse Avalanche Energy (NOTE 2)	125	mJ
P _D	Power Dissipation (T _C =25°C)	104	W
T _J	Operating Junction Temperature Range	-55 to 150	°C
T _{STG}	Storage Temperature Range	-55 to 150	°C
Marking Code		NC0P9	

Thermal Characteristics

Symbol	Parameter	Rating	Unit
R _{θJC}	Thermal Resistance Junction to Case	1.2	°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 =10mA	30	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =20V, V _{GS} =0V	---	---	10	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	---	---	0.85	mΩ
		V _{GS} =4.5V, I _D =20A	---	---	1.15	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	0.9	---	2.2	V

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _D =20A	---	75	---	nC
Q _{gs}	Gate-Source Charge		---	16	---	
Q _{gd}	Gate-Drain Charge		---	38	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =15V, V _{GS} =10V, R _G =3.3Ω, I _D =1A	---	17	---	nS
T _r	Rise Time		---	17	---	
T _{d(off)}	Turn-Off Delay Time		---	115	---	
T _f	Fall Time		---	80	---	
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, F=1MHz	---	7300	---	pF
C _{oss}	Output Capacitance		---	1300	---	
C _{rss}	Reverse Transfer Capacitance		---	760	---	
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	---	1.3	---	Ω

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =20A	---	---	1.2	V

NOTES :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. Starting T_J=25°C, V_{DD}=25V, L=0.1mH, R_G=25Ω.
3. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.



Characteristics Curves

FIG. 1-Drain Current

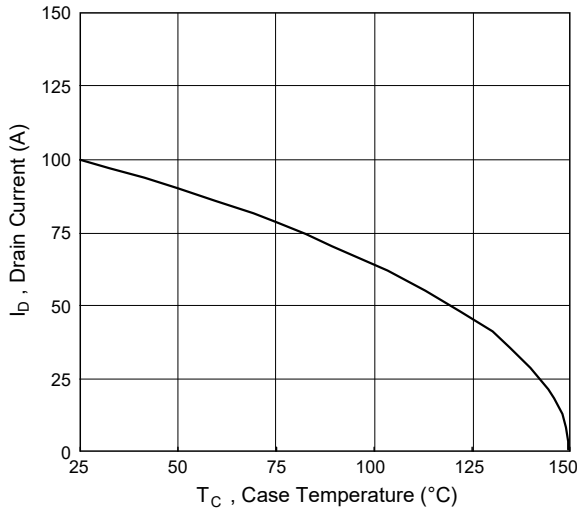


FIG. 2-Normalized $V_{GS(th)}$ vs T_J

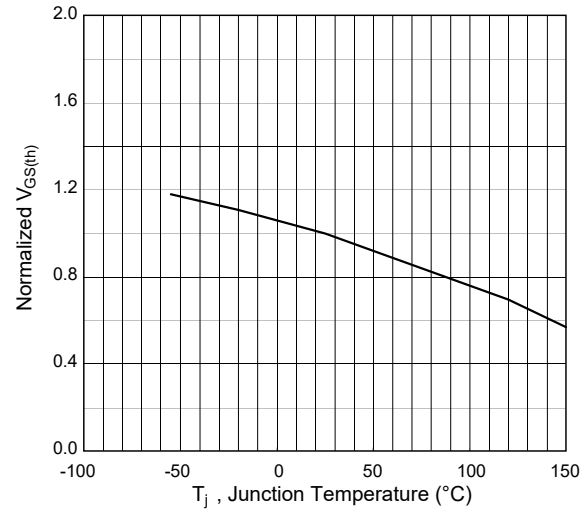


FIG. 3-Normalized R_{RDSON} vs T_J

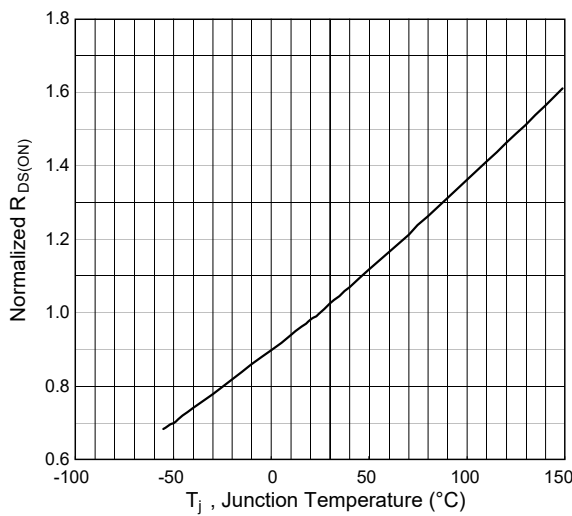


FIG. 4-Gate Charge Characteristics

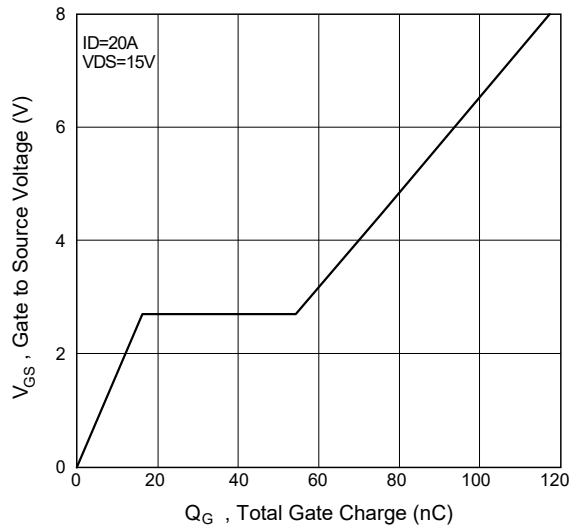


FIG. 5-Safe Operating Area

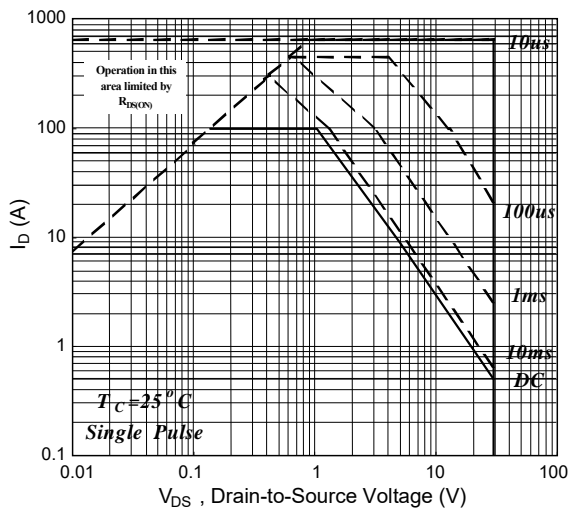
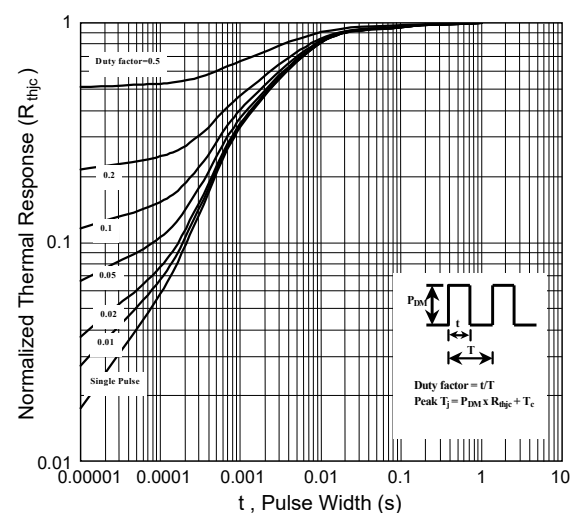
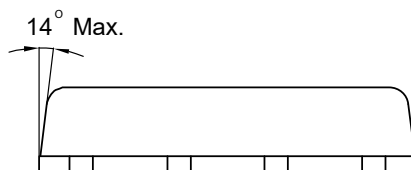
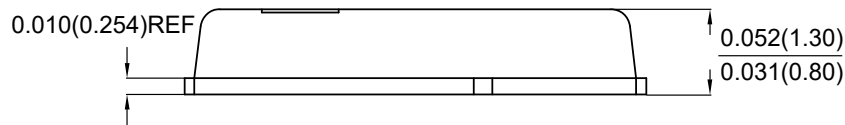
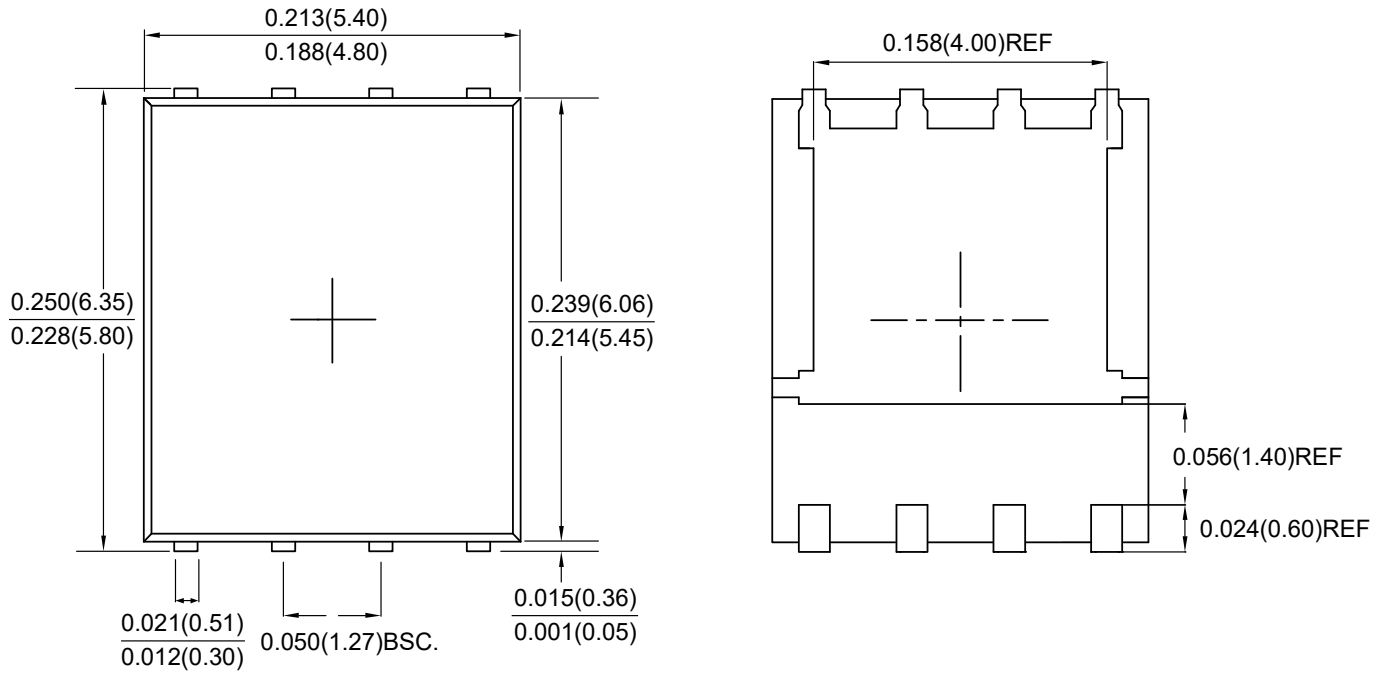


FIG. 6-Normalized Maximum Transient Thermal Impedance





Package Outline Dimensions



PPAK5X6

Dimensions in inches and (millimeters)



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