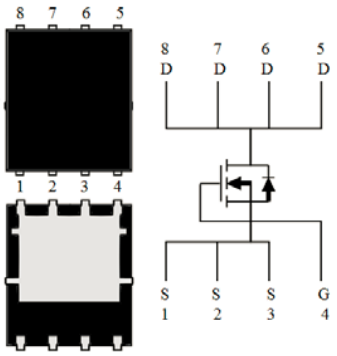
30V N-ch Power MOSFET

BV_{DSS}	$R_{DS(ON),max.}$	I_D
30V	2.6mΩ	28A

General Features

- Proprietary New Trench Technology
- Ultra-low Miller Charge
- $R_{DS(ON),typ.}$= 2.0mΩ@V_{GS}=10V
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode



Applications

- High efficiency DC/DC Converters
- Synchronous Rectification
- Motor Drive

Ordering Information

Part Number	Package	Marking
MXP32P6SG	PowerPAK	MXP32P6SG

Absolute Maximum Ratings

T_A=25℃ unless otherwise specified

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-to-Source Voltage[1]	30	V
V_{GSS}	Gate-to-Source Voltage	±20	
I_D	Continuous Drain Current at T_C=25℃	119	A
	Continuous Drain Current at T_C=25℃ (Package Limited)	100	
	Continuous Drain Current	28	
I_{DM}	Pulsed Drain Current at V_{GS}=10V[2]	170	
E_{AS}	Single Pulse Avalanche Energy (V_{DD}=15V, V_{GS}=10V, R_G=25Ω, L=0.1mH)	78	mJ
P_D	Power Dissipation at T_C=25℃	66	W
	Power Dissipation	2.5	W
	Derating Factor above 25℃	0.02	W/℃
T_J & T_{STG}	Operating and Storage Temperature Range	-55 to 150	℃

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.9	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	50	

Electrical Characteristics

OFF Characteristics

T_J =25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	30			V	V_{GS}=0V, I_D=1mA
I_{DSS}	Drain-to-Source Leakage Current			1	uA	V_{DS}=24V, V_{GS}=0V
				100	uA	V_{DS}=24V, V_{GS}=0V, T_J=125℃
I_{GSS}	Gate-to-Source Leakage Current			±100	nA	V_{GS}=±20V, V_{DS}=0V

ON Characteristics

T_J =25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	2.6	3.3	mΩ	V_{GS}=4.5V, I_D=28A[3]
		--	2.0	2.6	mΩ	V_{GS}=10V, I_D=28A[3]
$V_{GS(TH)}$	Gate Threshold Voltage	1.2	--	2.5	V	V_{DS} = V_{GS}, I_D=1mA

Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
C_{iss}	Input Capacitance		2300		pF	V_{GS}=0V, V_{DS}=15V, f=1.0MH$_Z$
C_{rss}	Reverse Transfer Capacitance		550			
C_{oss}	Output Capacitance		170			
R_G	Gate Series Resistance		0.9		Ω	f=1.0MH$_Z$
Q_g	Total Gate Charge		36		nC	V_{DD}=15V, I_D=28A, V_{GS}=10V
			17			V_{DD}=15V, I_D=28A, V_{GS}=4.5V
Q_{gs}	Gate-to-Source Charge		9.6			
Q_{gd}	Gate-to-Drain (Miller) Charge		5.4			

Resistive Switching Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$t_{d(on)}$	Turn-on Delay Time		20		ns	V_{DD}=15V I_D=14A V_{GS}=10V R_G=10Ω
t_{rise}	Rise Time		12			
$t_{d(off)}$	Turn-off Delay Time		61			
t_{fall}	Fall Time		18			

Source-Drain Body Diode Characteristics

T_J=25℃ unless otherwise specified

Symbol	Parameter	Min	Typ.	Max.	Unit	Test Conditions
V_{SD}	Diode Forward Voltage			1.2	V	I_S=28A, V_{GS}=0V
t_{rr}	Reverse Recovery Time		34		ns	V_{GS}=0V I_F=28A,di/dt=100A/μs
Q_{rr}	Reverse Recovery Charge		25		nC	

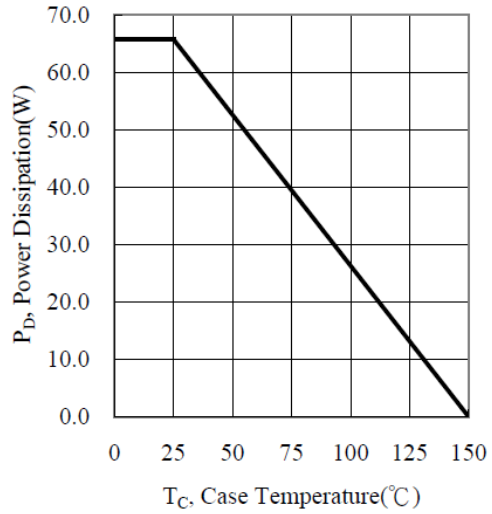
Note:

[1] T_J=+25℃ to +150℃
[2] Repetitive rating, pulse width limited by both maximum junction temperature.
[3] Pulse width≤380μs; duty cycle≤2%.

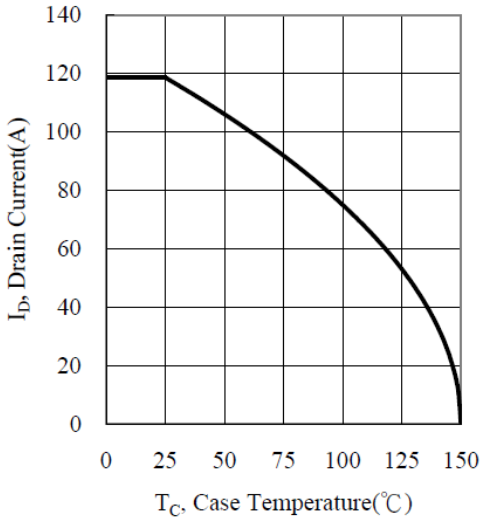
Typical Characteristics

T_J=25℃ unless otherwise specified

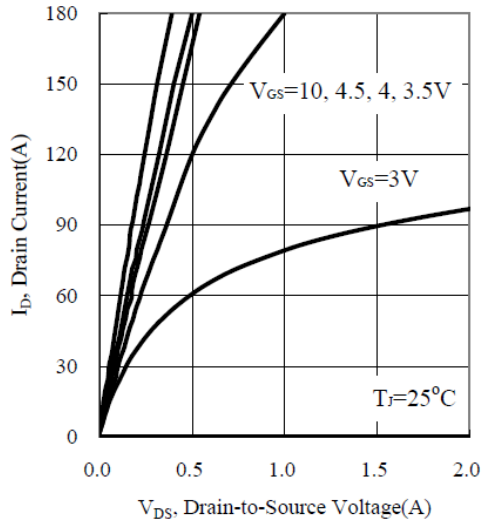
1. Power Dissipation



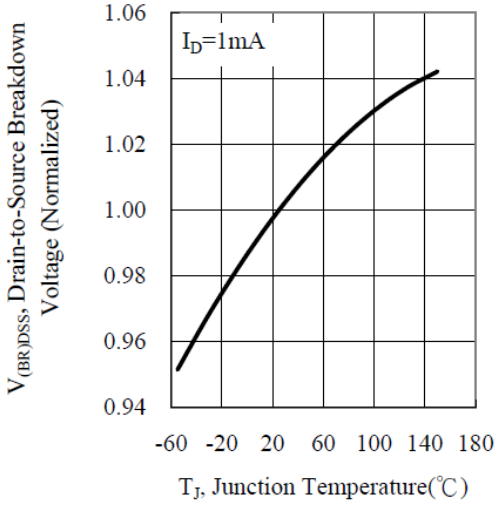
2. Drain Current



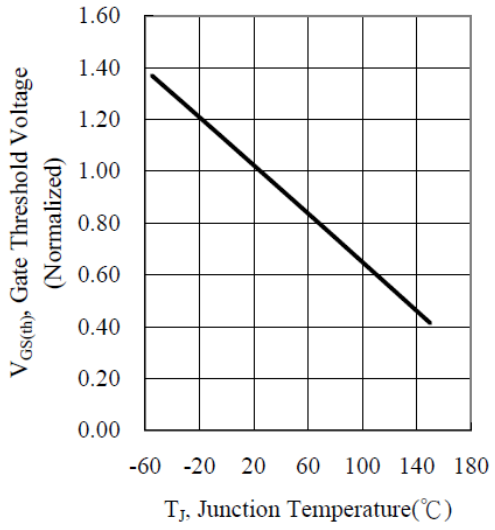
3. Output Characteristics T_C=25°C



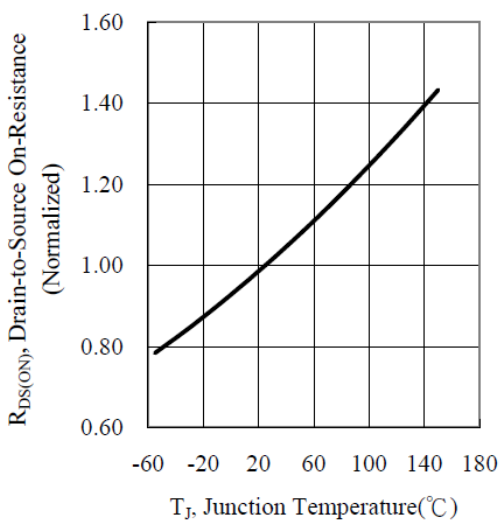
4. Drain-to-Source Breakdown Voltage



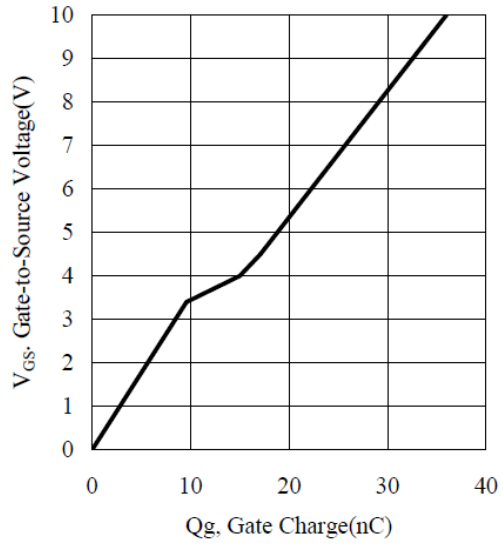
5. Gate Threshold Voltage



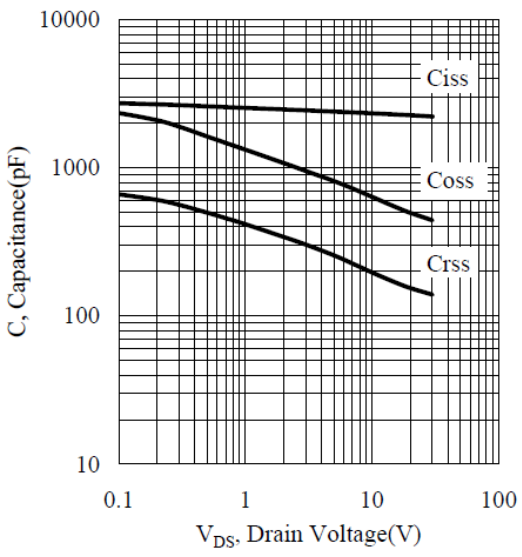
6. Drain-to-Source On-Resistance



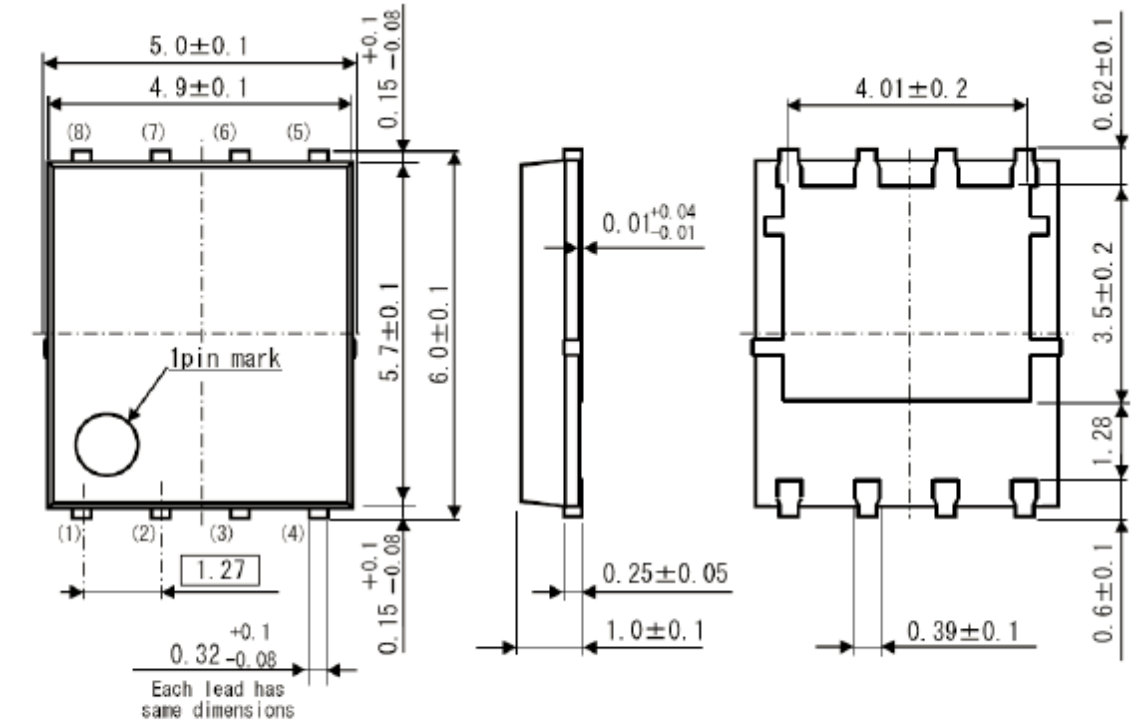
7. Typ. Gate Charge

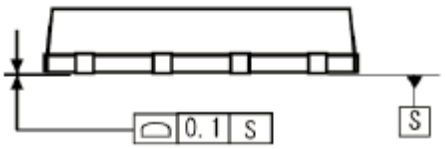


8. Typ. Capacitance



Package Dimensions





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