

N-Channel MOSFET

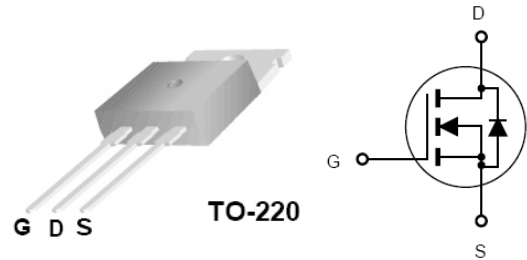
Applications:

- Power Supply
- DC-DC Converters

V_{DSS}	$R_{DS(ON)}(MAX)$	I_D^a
60V	18m Ω	68A

Features:

- Lead Free
- Low $R_{DS(ON)}$ to Minimize Conductive Loss
- Low Gate Charge for Fast Switching Application
- Optimized B_{VDSS} Capability



Ordering Information

Park Number	Package	Brand
MXP6018CT	TO-220	MXP

Absolute Maximum Ratings

$T_c=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-to-Source Voltage	60	V
I_D^a	Continuous Drain Current	68	A
I_{DM}	Pulsed Drain Current @ $V_G=10V$	272	
P_D	Power Dissipation	115	W
	Derating Factor above 25°C	0.77	W/ $^\circ\text{C}$
V_{GS}	Gate-to-Source Voltage	+/-20	V
E_{AS}	Single Pulse Avalanche Energy ($L=11.9\text{mH}$, $I_{AS}=5.5\text{A}$)	360	mJ
I_{AS}	Pulsed Avalanche Energy	Figure 9	A
T_J and T_{STG}	Operating Junction and Storage Temperature Range	-55 to 175	$^\circ\text{C}$

Thermal Resistance

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
$R_{\theta JC}$	Junction-to-Case			1.30	$^\circ\text{C}/\text{W}$	Water cooled heatsink, P_D adjusted for a peak junction Temperature of 175°C
$R_{\theta JA}$	Junction-to-Ambient			62		1 cubic foot chamber, free air

Note:

a: Calculated continuous current based upon maximum allowable junction temperature $+175^\circ\text{C}$. Package limitation current is 80A.

OFF CharacteristicsT_J=25°C unless otherwise specified

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
B _{VDS}	Drain-to-Source Breakdown Voltage	60			V	V _{GS} =0V, I _D =250uA
I _{DSS}	Drain-to-Source Leakage Current			1	uA	V _{DS} =48V, V _{GS} =0V
				100		V _{DS} =48V, V _{GS} =0V, T _J =125 °C
I _{GSS}	Gate-to-Source Forward Leakage			100	nA	V _{GS} =+20V
	Gate-to-Source Reverse Leakage			100		V _{GS} = -20V

ON CharacteristicsT_J=25°C unless otherwise specified

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
R _{DS(ON)}	Static Drain-to-Source On-Resistance		12.5	18	mΩ	V _{GS} =10V, I _D =30A
V _{GS(TH)}	Gate Threshold Voltage.	2		4	V	V _{GS} =V _{DS} , I _D =250uA

Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
C _{iss}	Input Capacitance		1008		pF	V _{GS} =0V, V _{DS} =30V, f=1.0MHz
C _{oss}	Output Capacitance		158			
C _{rss}	Reverse Transfer Capacitance		67			
Q _g	Total Gate Charge		20		nC	V _{DD} =30V, I _D =68A, V _{GS} =10V
Q _{gs}	Gate-to-Source Charge		7			
Q _{gd}	Gate-to-Drain ("Miller") Charge		6.8			
T _{d(on)}	Turn-in Delay Time		8.7		nS	V _{DD} =30V, I _D =68A, V _G =10V, R _G =2.5Ω
T _r	Rise Time		45.1			
T _{d(off)}	Turn-off Delay Time		25.6			
T _f	Fall Time		6.8			

Source-Drain Diode CharacteristicsT_J=25°C unless otherwise specified

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
V _{SD}	Diode Forward Voltage			1.2	V	I _S =30A, V _{GS} =0V

Figure 1. Maximum Power Dissipation V.S Case Temperature

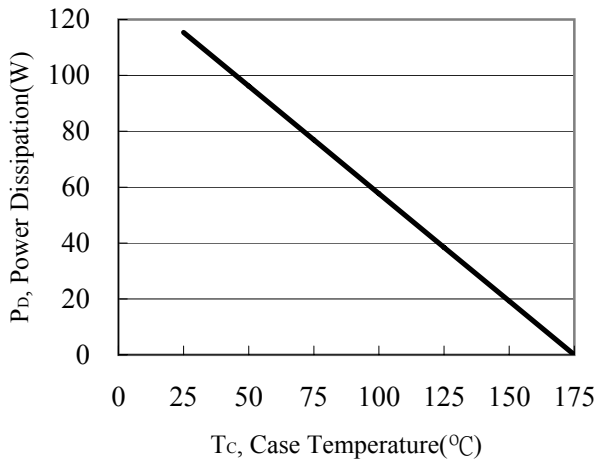


Figure 2. Maximum Continuous Drain Current V.S Case Temperature

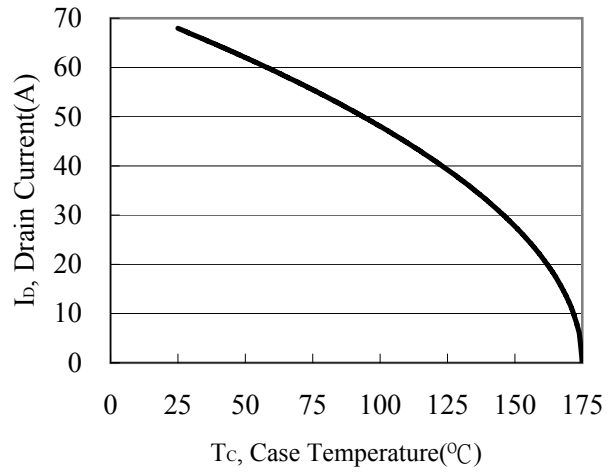


Figure 3. Typical Output Characteristics

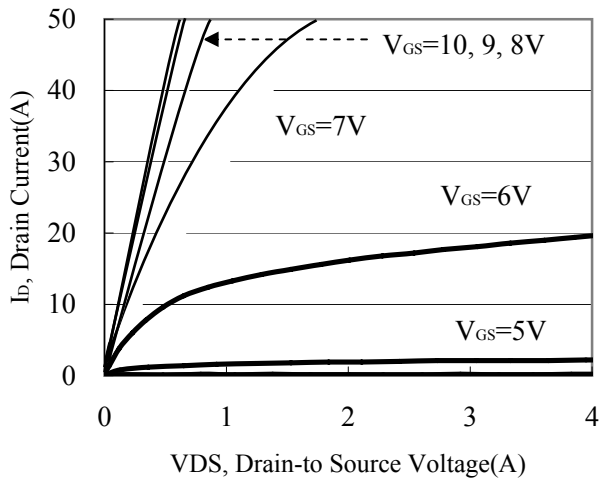


Figure 4. Breakdown Voltage V.S Junction Temperature

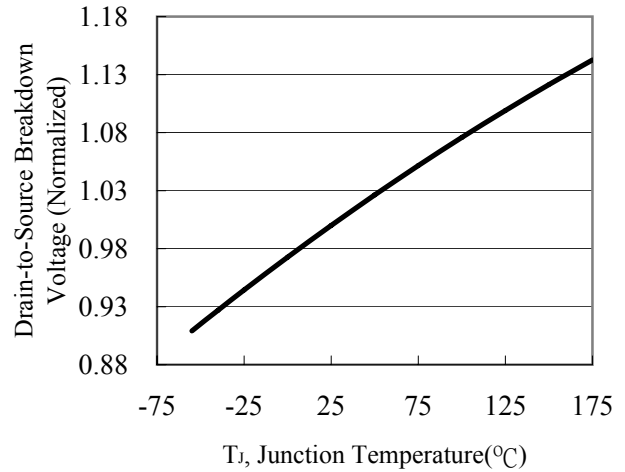


Figure 5. Threshold Voltage V.S Junction Temperature

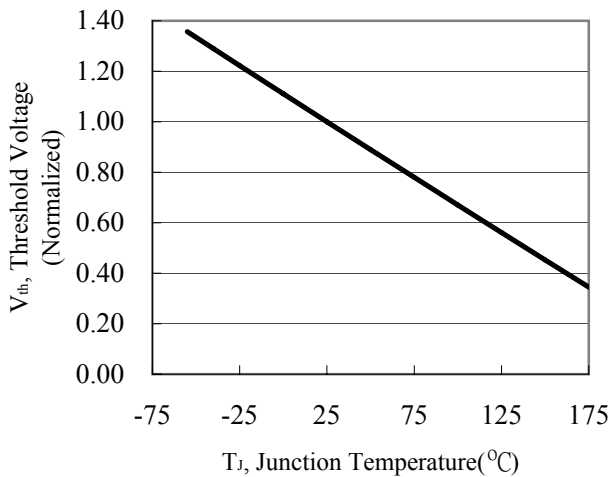


Figure 6. Drain-to-Source Resistance V.S Junction Temperature

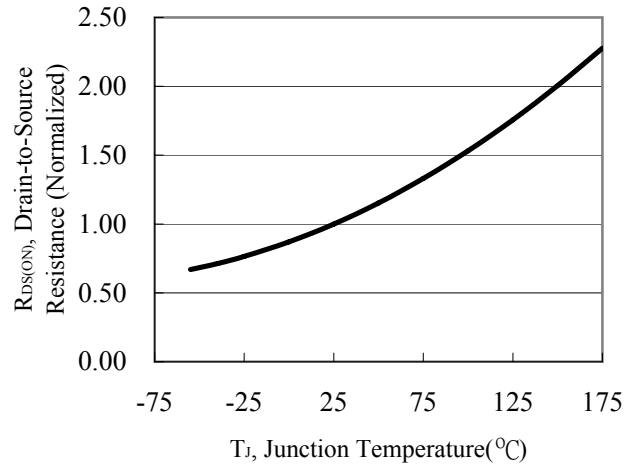


Figure 7. Typical Gate Charge vs. Gate-to-Source Voltage

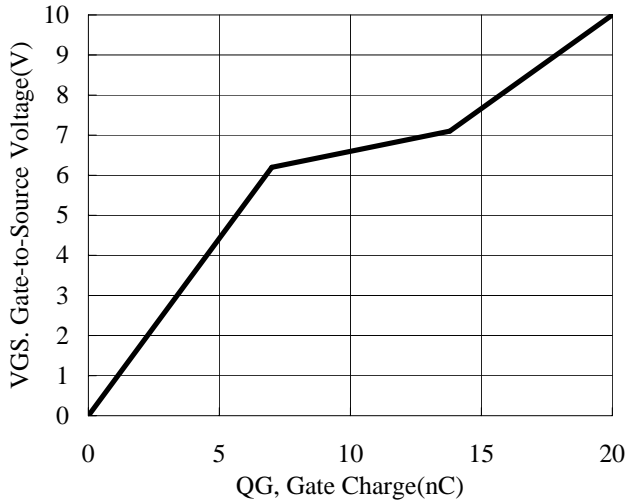


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

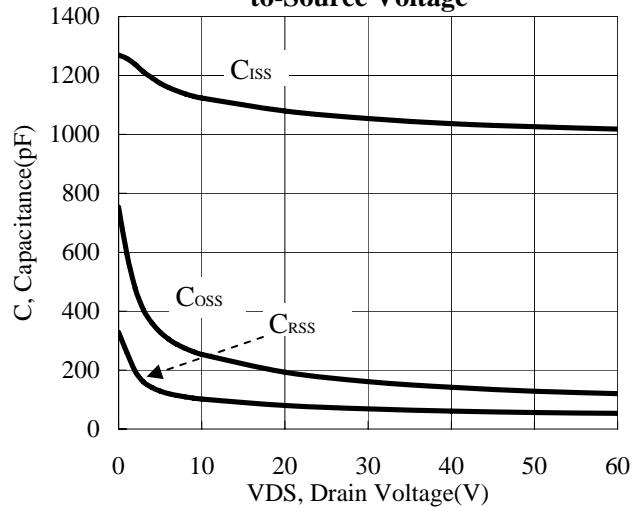


Figure 9. Unclamped Inductive Switching Capability

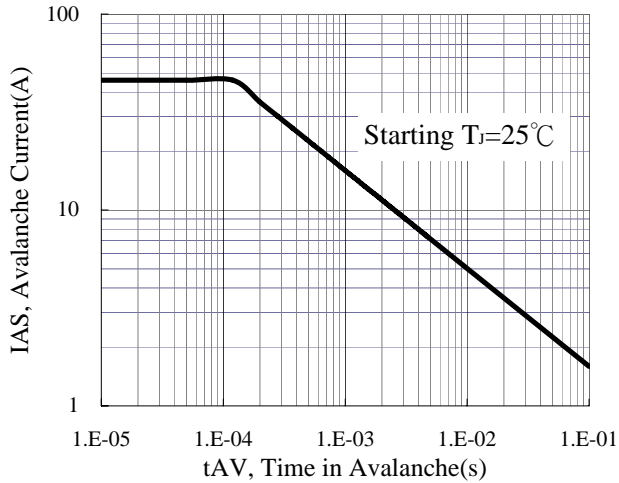
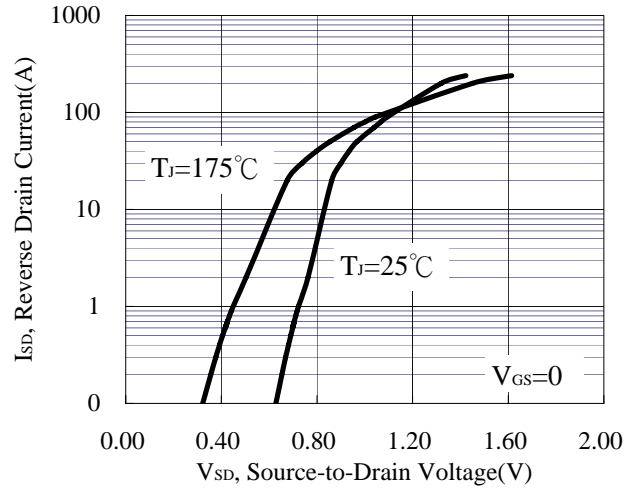


Figure 10. Source-Drain Diode Forward Voltage



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