60V N-Channel MOSFET

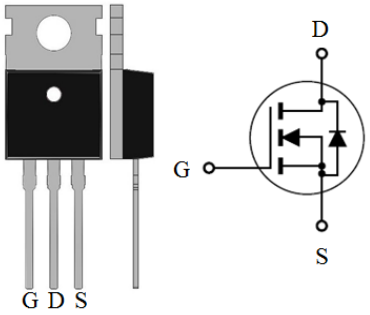
Applications:

- Power Supply
- DC-DC Converters

V_{DS}	$R_{DS(ON)}$(MAX)	I_D
60V	4mΩ	183A

Features:

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



TO220 Pin Definition and Inner Circuit

Ordering Information

Park Number	Package	Brand
MXP6004CTS	TO220	MXP

Absolute Maximum Ratings

T_C=25℃ unless otherwise specified

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-to-Source Voltage		60	V
I_D	Continuous Drain Current	Silicon Limited	183	A
		Package Limited	80	
I_{DM}	Pulsed Drain Current @V_{GS}=10V		732	
P_D	Power Dissipation		268	W
V_{GS}	Gate-to-Source Voltage		+/-20	V
T_J and T_{stg}	Operating Junction and Storage Temperature Range		-55 to 175	℃

Avalanche Characteristics

T_C=25℃ unless otherwise specified

Symbol	Parameter	Value	Unit
E_{AS}①	Single Pulse Avalanche Energy (V_{DS}=30V, V_{GS}=10V, Rg=25Ω, L=1mH)	200	mJ
I_{AS}	Single Pulse Avalanche Current	Figure 9	A

Thermal Resistance

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.56	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62	℃/W

① : Guarantee number.

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OFF Characteristics

T_J=25℃ unless otherwise specified

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
$V_{(BR)DSS}$	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 ℃
I_{GSS}	Gate-to-Source Forward Leakage	-	-	100	nA	V_{GS}=+20V
	Gate-to-Source Reverse Leakage	-	-	100		V_{GS}= -20V

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	-	3.4	4.0	mΩ	V_{GS}=10V, I_D=80A
$V_{GS(th)}$	Gate Threshold Voltage	2.0	-	4.0	V	V_{GS}=V_{DS}, I_D=250uA

Dynamic Characteristics

T_J=25℃ unless otherwise specified

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
Ciss	Input Capacitance	-	7288	-	pF	V_{GS}=0V, V_{DS}=25V, f=1.0MHz
Coss	Output Capacitance	-	904	-		
Crss	Reverse Transfer Capacitance	-	290	-		
Qg	Total Gate Charge	-	95	-	nC	V_{DD}=30V, I_D=80A, V_{GS}=10V
Qgs	Gate-to-Source Charge	-	37	-		
Qgd	Gate-to-Drain ("Miller") Charge	-	29	-		
Td(on)	Turn-on Delay Time	-	19	-	ns	V_{DD}=30V, I_D=40A, V_{GS}=10V, R_G=10Ω, R_L=0.75 Ω
Tr	Rise Time	-	69	-		
Td(off)	Turn-off Delay Time	-	37	-		
Tf	Fall Time	-	15	-		

Source-Drain 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=80A, V_{GS}=0V

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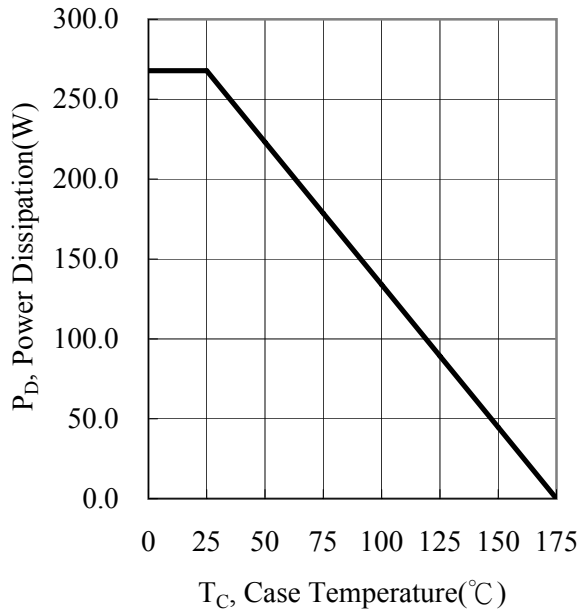
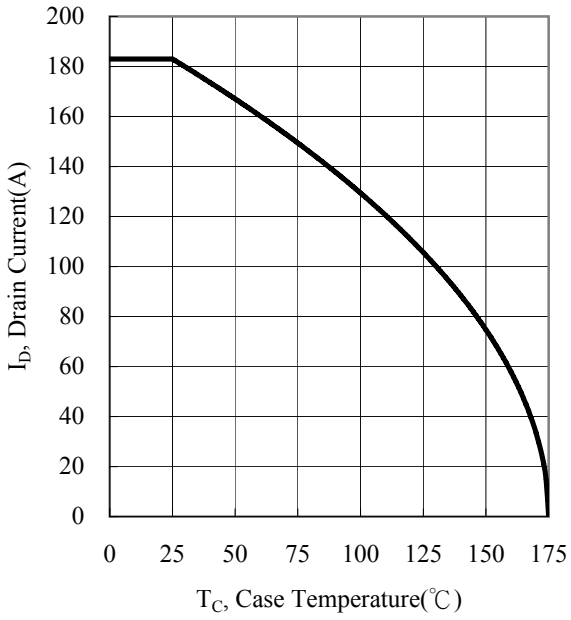
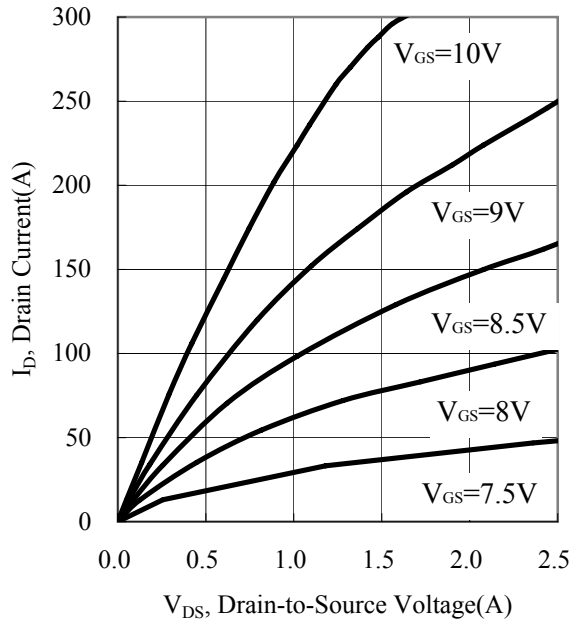
1. Power Dissipation



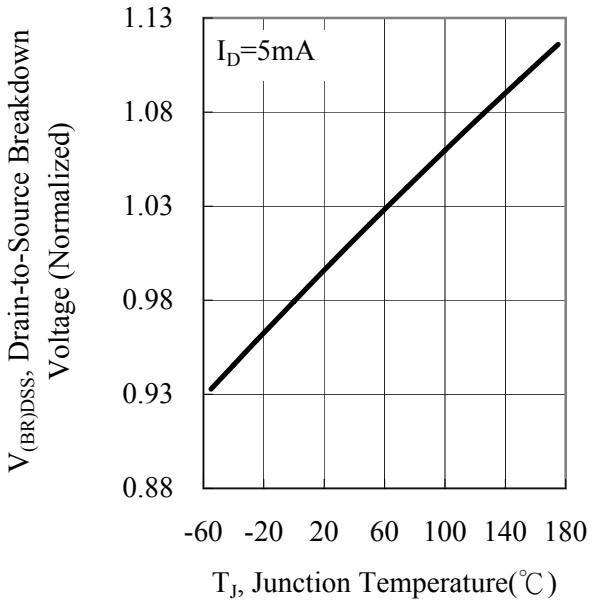
2. Drain Current



3. Output Characteristics T_C=25°C



4. Drain-to-Source Breakdown Voltage



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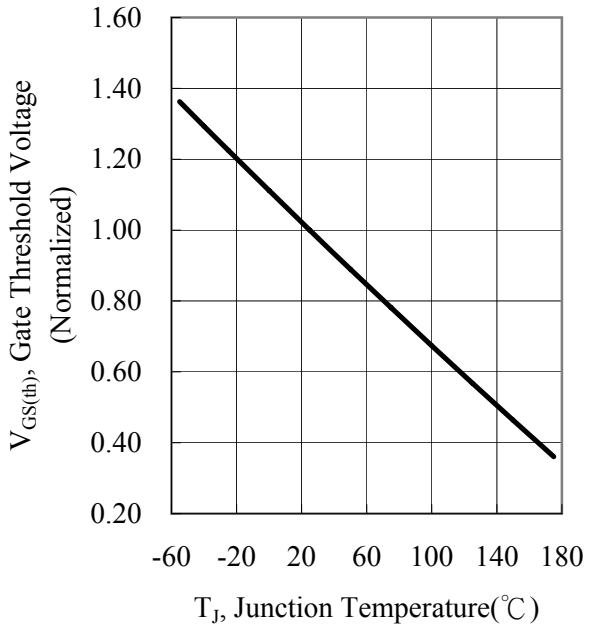
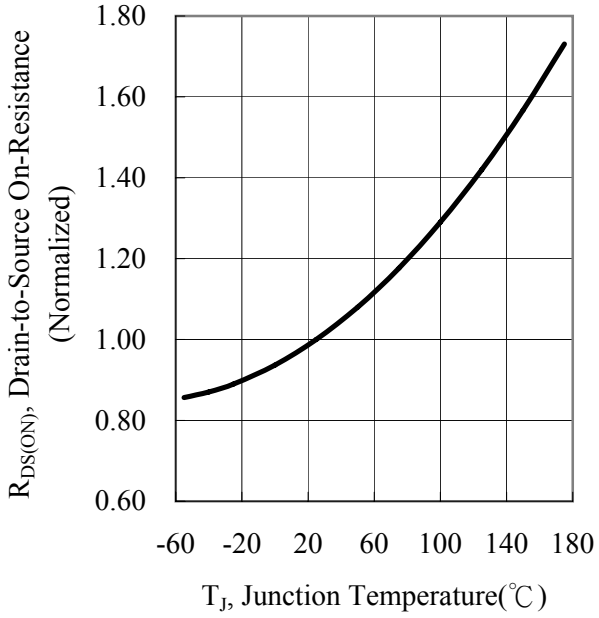
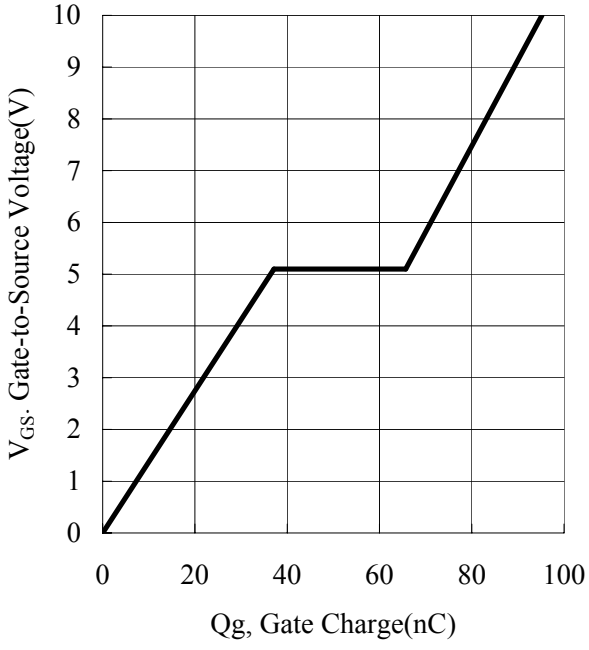
5. Gate Threshold Voltage



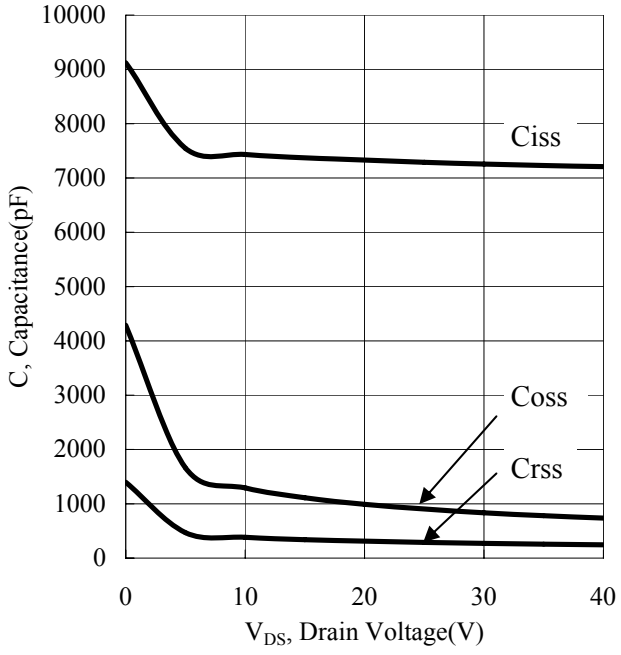
6. Drain-to-Source On-Resistance



7. Typ. Gate Charge



8. Typ. Capacitance



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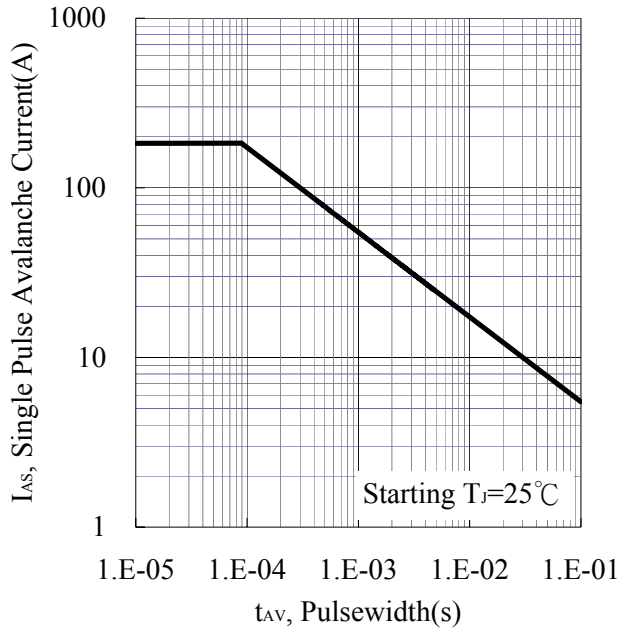
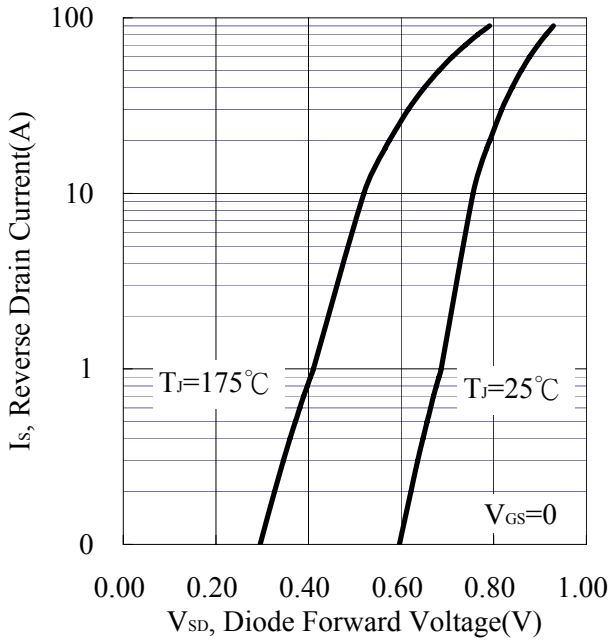
9. Avalance Characteristics



10. Forward Characteristics of reverse diode



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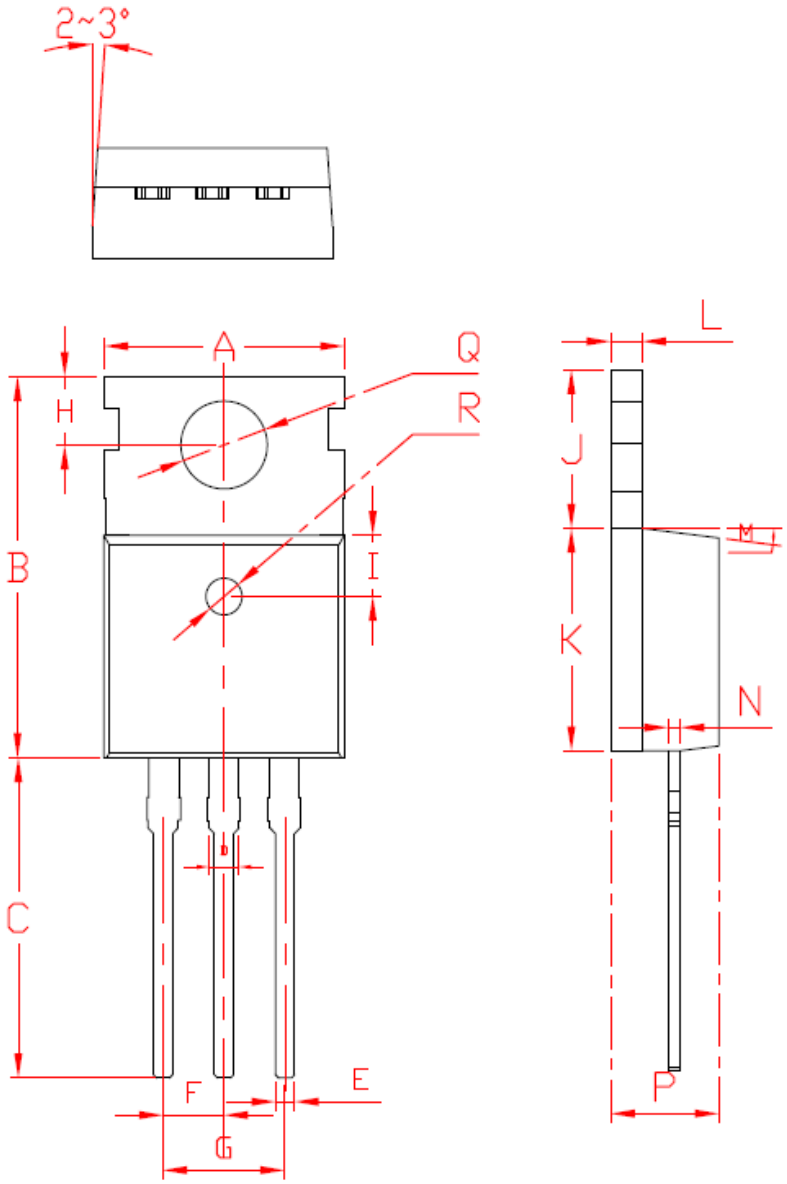
TO220

1. Outline Dimension



Symbol	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Min	9.8	15.4	12.75					2.73		6.4	9	1.29		0.48	2.35	4.4	3.5	1.4
Non	10	15.6	13.1	1.31	0.8	2.54	5.08	2.8	2.5	6.5	9.1	1.3	1.27	0.5	2.4	4.5	3.6	1.5
Max	10.2	15.8	13.17					2.87		6.6	9.2	1.32		0.56	2.5	4.7	3.63	1.6

UNIT : mm

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