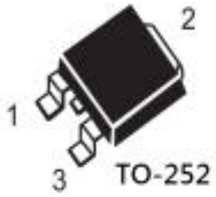
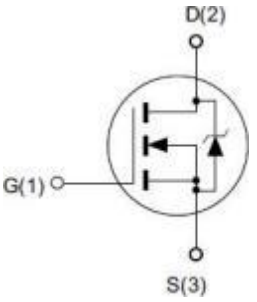
MPD07N65A

N-Channel Power MOSFET

Features

- 650V, 7A, $R_{DS(ON)}$(Typ.) = 1.15Ω@VGS = 10V.
- Low Crss
- Fast Switching
- 100% Avalanche Tested





Application

- Adapter
- LCD Panel Power
- E-Bike Charger
- Switching Mode Power Supply

Absolute Maximum Ratings T_C = 25。C unless otherwise noted

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage [a]	650	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Drain Current-Continuous, T_C =25°C	7	A
	Drain Current-Continuous, T_C =100°C	4	A
I_{DM}	Drain Current-Pulsed [b]	28	A
P_D	Maximum Power Dissipation @ T_J =25°C	69	W
EAS	Single Pulsed Avalanche Energy [d]	125	mJ
T_J, T_{STG}	Operating and Store Temperature Range	-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-Case Max.	1.8	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient Max.	60	°C/W

Electrical Characteristics T_J = 25。C unless otherwise noted

■ **Off Characteristics**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	650	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 650V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Forward Gate Body Leakage Current	V_{DS} = 0V, V_{GS} = ±30V	-	-	±100	nA

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_{GS}(th)	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D =250μA	2.0	-	4.0	V
R_{DS}(on)	Static Drain-Source On-Resistance [c]	V_{GS} = 10V, I_D =3.5A	-	1.15	1.35	Ω

■ Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Ciss	Input Capacitance	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz	-	1089	-	pF
Coss	Output Capacitance		-	100	-	pF
Crss	Reverse Transfer Capacitance		-	14	-	pF

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 325V, I_D =7A, R_G = 10Ω,V_{GS}=10V	-	19	-	ns
t_r	Turn-On Rise Time		-	29	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	78	-	ns
t_f	Turn-Off Fall Time		-	35	-	ns
Qg	Total Gate Charge	V_{DS} = 520V, I_D =7A, V_{GS} = 10V	-	27		nC
Qgs	Gate-Source Charge		-	6	-	nC
Qgd	Gate-Drain Charge		-	11	-	nC

■ Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Drain-Source Diode Forward Continuous Current	V_{GS} = 0V	-	-	7	A
I_{SM}	Maximum Pulsed Current	V_{GS} = 0V	-	-	28	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0V, I_S = 7A	-		1.4	V
Trr	Body Diode Reverse Recovery Time	di/dt=100A/us I_S=7A,V_{GS}=0V	-	340	-	ns
Qrr	Reverse Recovery Charge		-	2900	-	nC

Notes:

a. T_J=-55℃ to +150℃.

b. Repetitive rating; pulse width limited by maximum junction temperature.

c. Pulse width≦ 300us; duty cycle≦ 2%.

d. L=10mH, V_{DD}=50V,I_{as}=5A,R_G=25Ω Starting T_J=25℃.

■ Characteristic Curve

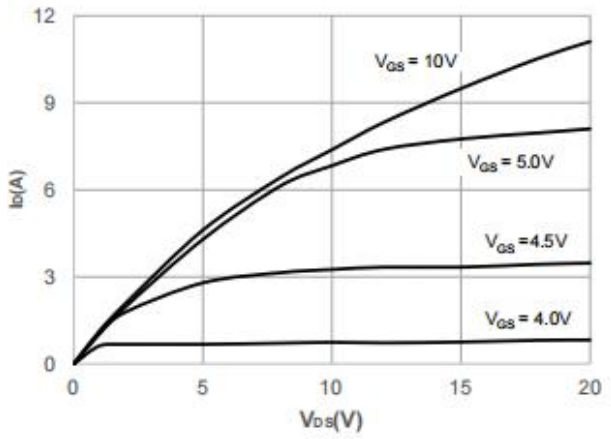


Figure 1. Typical Output Characteristics

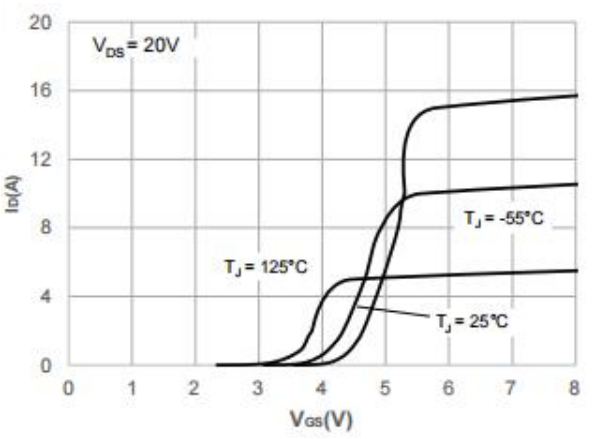


Figure 2. Typical Transfer Characteristics

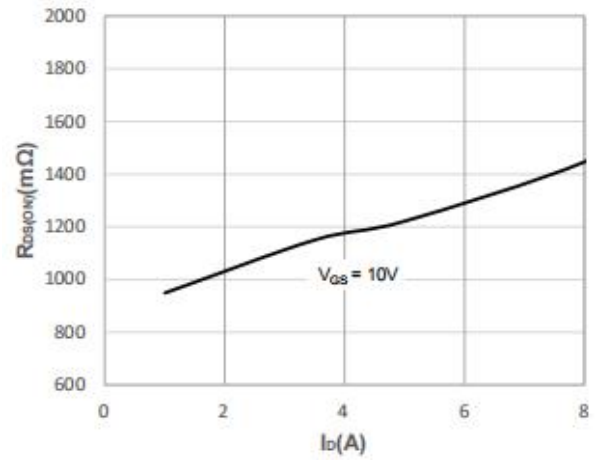


Figure 3. On- Resistance vs. Drain Current

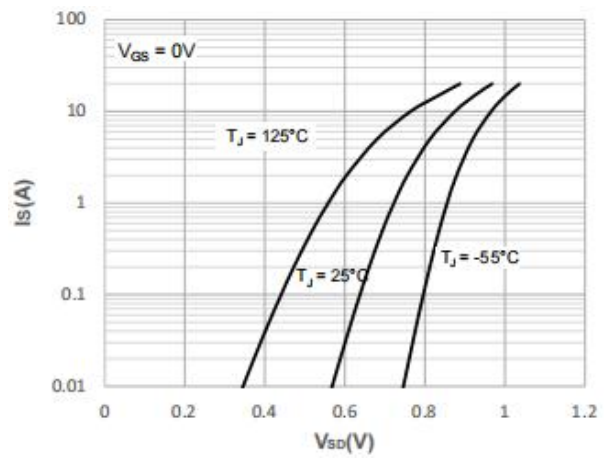


Figure 4.Body-Diode Characteristics

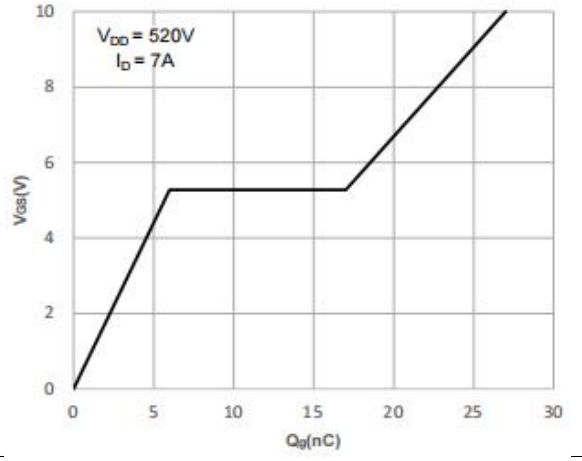


Figure 5. Gate-Charge Characteristics

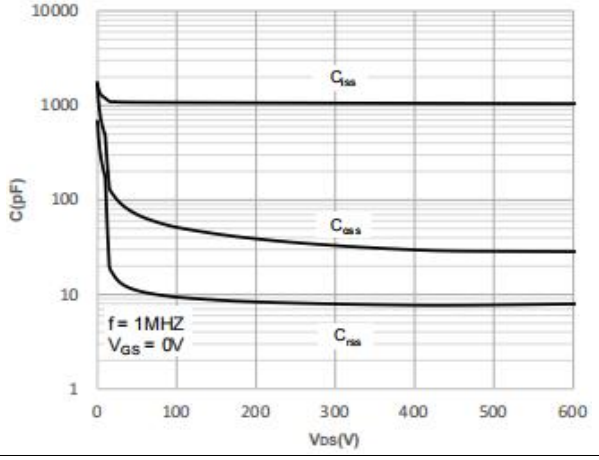


Figure 6.Capacitance Characteristics

■ Characteristic Curve

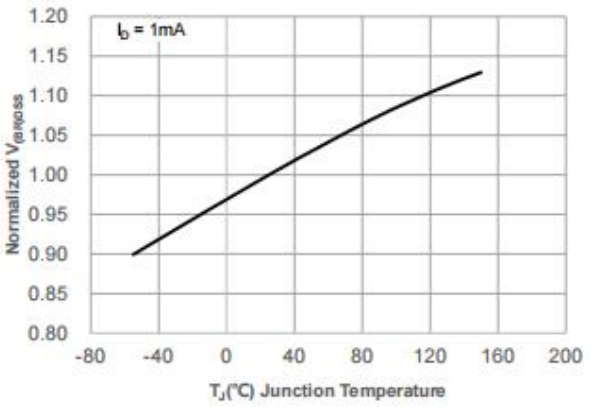


Figure 7.Normalized Breakdown voltage vs. Junction Temperature

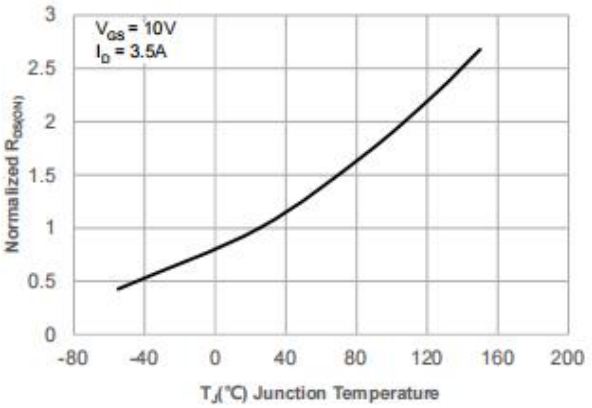


Figure 8. Normalized on Resistance vs. Junction Temperature

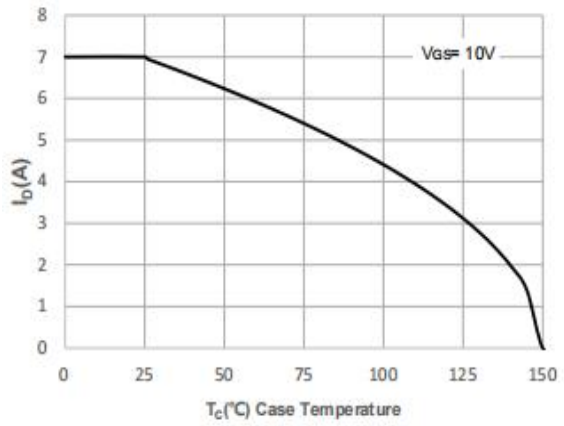


Figure 9: Maximum Continuous Drain Current vs. Case Temperature

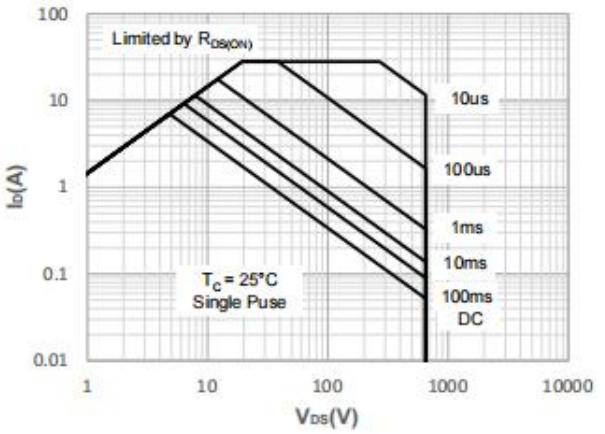


Figure 10:Maximum Safe Operating Area

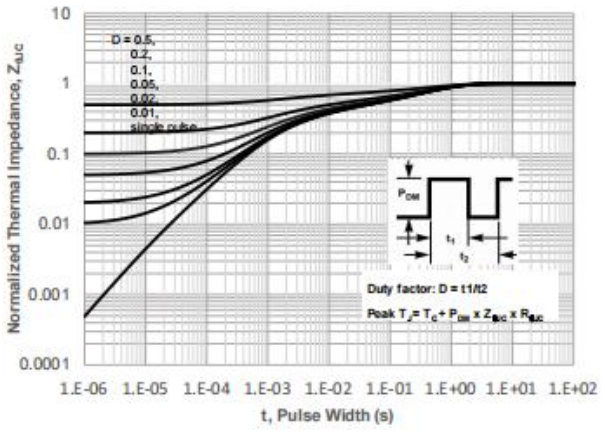
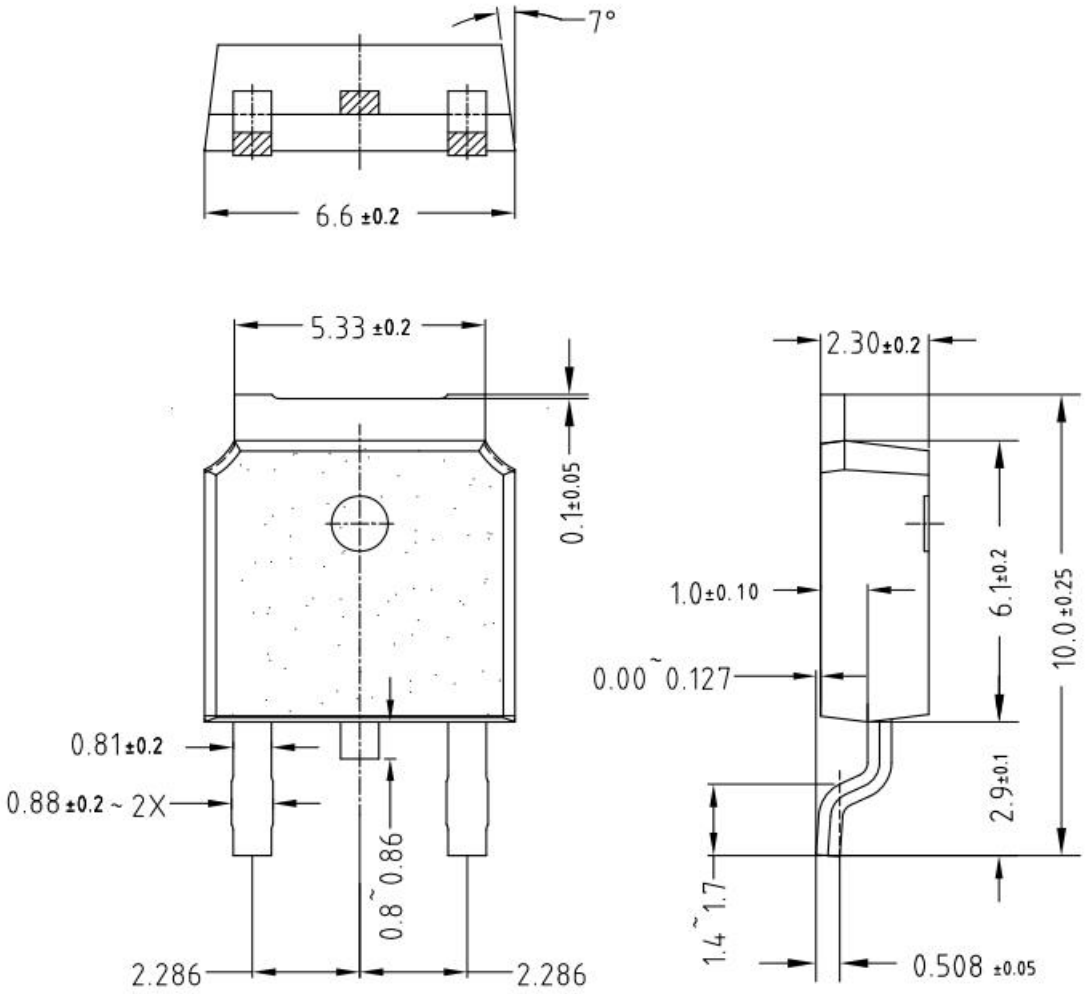


Figure 11: Normalized Maximum Transient Thermal Impedance

■ Package Information

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