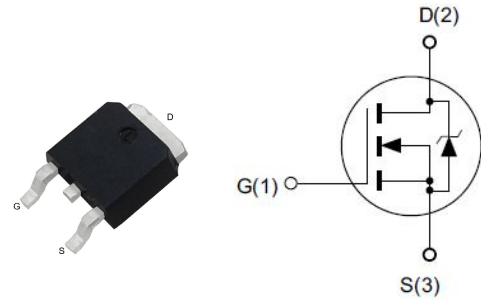


Features

- ◆ 650V, 7A, $R_{DS(on)}$ (Typ.) = $1.2\Omega @ V_{GS} = 10V$
- ◆ Low Gate Charge
- ◆ Low C_{rss}
- ◆ 100% Avalanche Tested
- ◆ Fast Switching

Application

- ◆ TV Power
- ◆ A dapter/Charger
- ◆ Switch Mode Power Supply
- ◆ Uninterruptible Power Supply



Absolute Maximum Ratings $T_c = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-Source Voltage ^a	650	V
V_{GS}	Gate-Source Voltage	± 30	
I_D	Drain Current-Continuous	$T_C = 25^\circ\text{C}$	7.0
		$T_C = 100^\circ\text{C}$	4.2
I_{DM}	Drain Current-Pulsed ^b	28	A
P_D	Maximum Power Dissipation, $T_J = 25^\circ\text{C}$	105	W
dv/dt	Peak Diode Recovery dv/dt ^c	5.0	V/ns
E_{AS}	Single Pulsed Avalanche Energy ^d	300	mJ
T_J, T_{STG}	Operating and Store Temperature Range	150, -55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.3	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	64	

Electrical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise noted

■ Off Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu\text{A}$	655	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 650V, V_{GS} = 0V$	-	-	1.0	μA
I_{GSS}	Forward Gate Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 30V$	-	-	± 100	nA



MPD07N65B

N-Channel Power MOSFET

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	-	4.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ^c	$V_{GS} = 10V, I_D = 3.5A$	-	1.2	1.3	Ω

■ Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
R_G	Gate Resistance	$f = 1.0MHz$	-	2.5	-	Ω
C_{iss}	Input Capacitance	$V_{DS} = 25V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	-	1278	-	pF
C_{oss}	Output Capacitance		-	87	-	
C_{rss}	Reverse Transfer Capacitance		-	3.8	-	

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 325V,$ $V_{GS} = 10V,$ $I_D = 7.0A,$ $R_G = 25\Omega$	-	19.8	-	ns
t_r	Turn-On Rise Time		-	50.1	-	
$t_{d(off)}$	Turn-Off Delay Time		-	90.2	-	
t_f	Turn-Off Fall Time		-	54.8	-	
Q_g	Total Gate Charge	$V_{DD} = 520V,$ $V_{GS} = 0 \text{ to } 10V,$ $I_D = 7.0A$	-	26	-	nC
Q_{gs}	Gate-Source Charge		-	7.0	-	
Q_{gd}	Gate-Drain Charge		-	8.1	-	

■ Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0V, I_s = 7.0A$	-	-	1.2	V
T_{rr}	Body Diode Reverse Recovery Time	$V_R = 400V, I_F = 7.0A$ $di_F/dt = 100A/\mu s$	-	352	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	3.3	-	μC
I_{rrm}	Peak reverse recovery current		-	TBD	-	A

Notes:

- $T_J = +25^\circ C \text{ to } +150^\circ C$.
- Repetitive rating; pulse width limited by maximum junction temperature.
- Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.
- $L = 10mH, V_{DD} = 50V, I_{AS} = 7.0A, R_G = 25\Omega$ Starting $T_J = 25^\circ C$.

■ Characteristic Curve

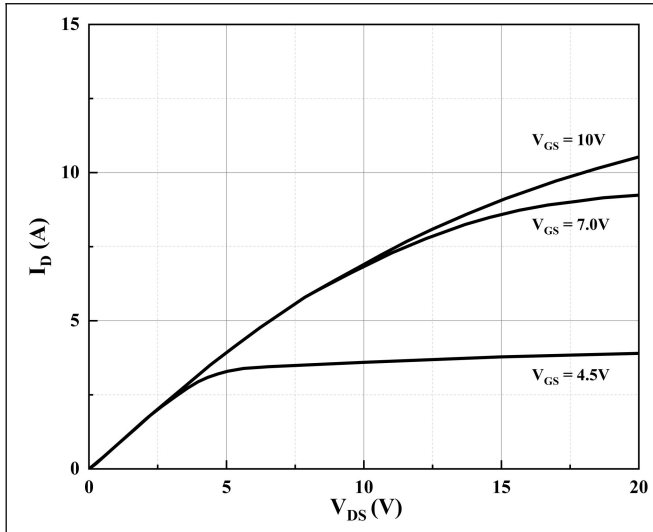


Figure 1. Typical Output Characteristics

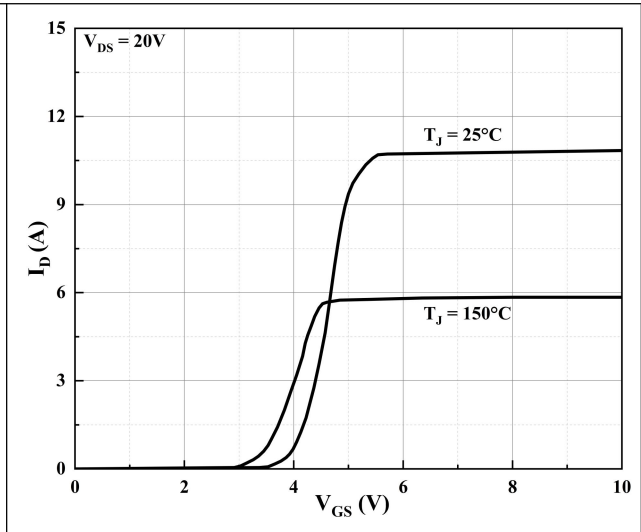


Figure 2. Typical Transfer Characteristics

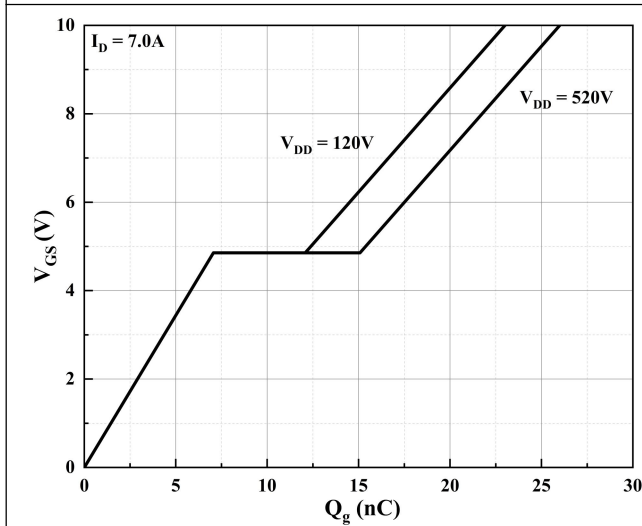


Figure 3. Typical Gate Charge

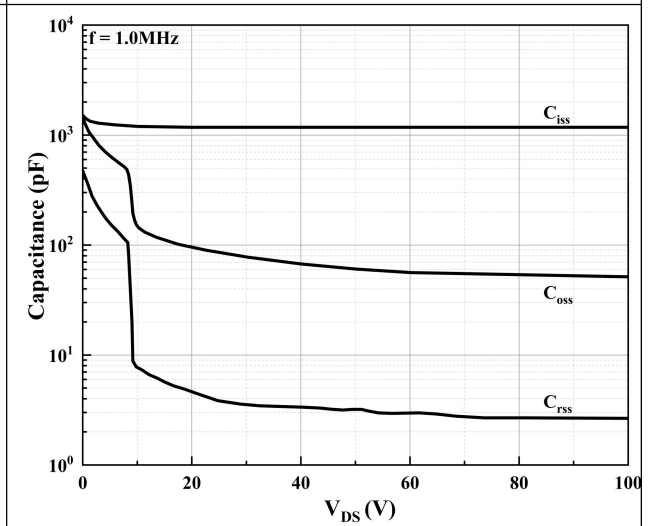


Figure 4. Typical Capacitance

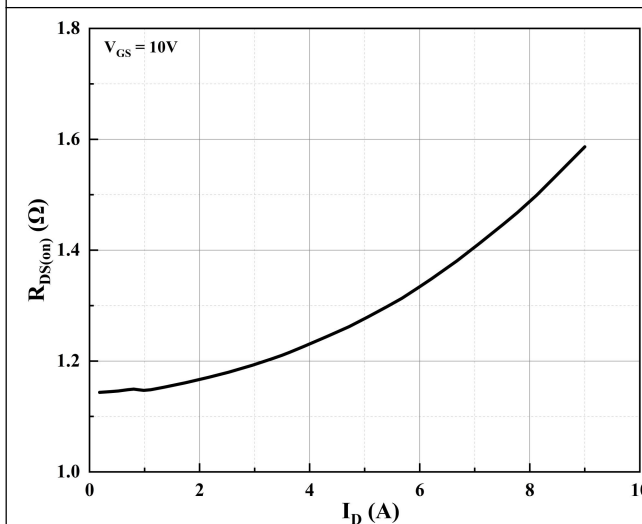


Figure 5. Static Drain-Source On-Resistance vs. Drain Current

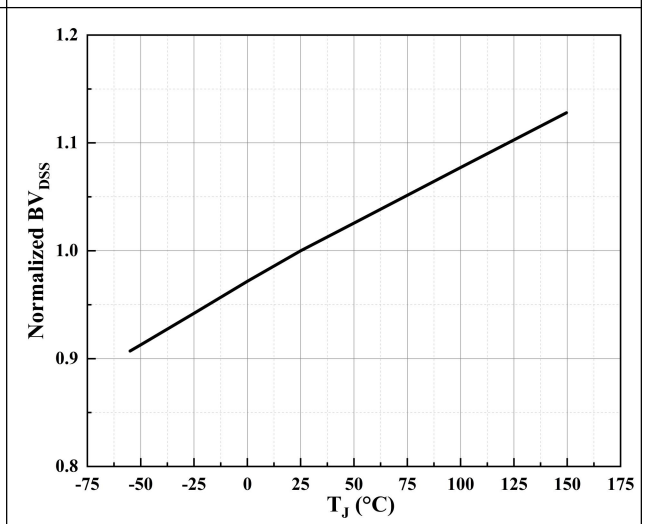


Figure 6. Drain-source Breakdown Voltage

■ Characteristic Curve

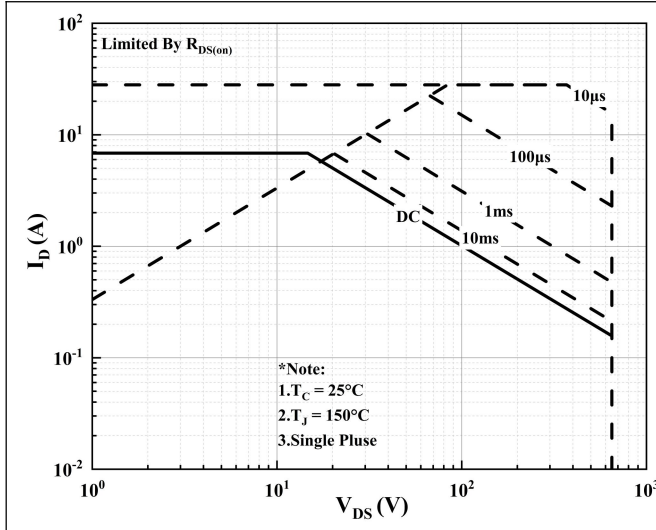


Figure 7. Maximum Safe Operating Area

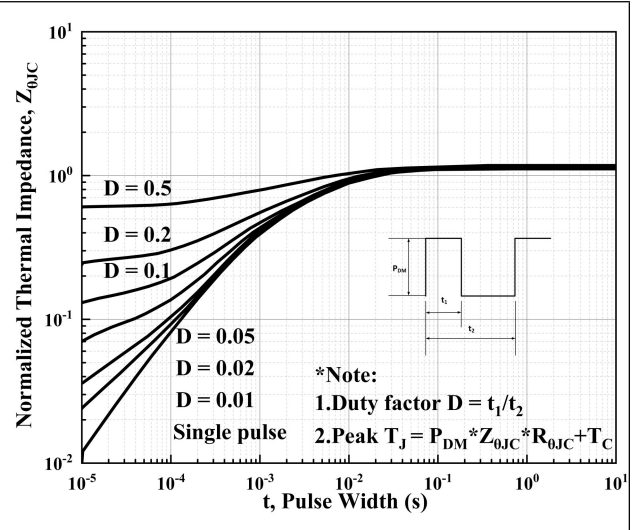


Figure 8. Normalized Maximum Transient Thermal Impedance

