TAVAKOL ELECTRONIC
توکل الکترونیک
مرجع تخصصی تأمین قطعات الکترونیکی اورجینال
این دیتاشیت توسط توکل الکترونیک تهیه و ارائه شده است.
جهت مشاهده قیمت، موجودی و ثبت سفارش این قطعه به وب‌سایت توکل الکترونیک مراجعه فرمایید.
مشاهده قیمت و خرید
برای خرید و مشاهده سایر محصولات کلیک کنید

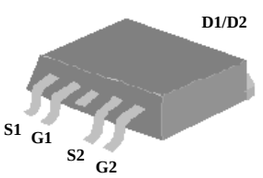
AP4506GEH

RoHS-compliant Product

Advanced Power Electronics Corp.

N AND P-CHANNEL ENHANCEMENT MODE POWER MOSFET

- ▼ **Simple Drive Requirement**
- ▼ **Good Thermal Performance**
- ▼ **Fast Switching Performance**

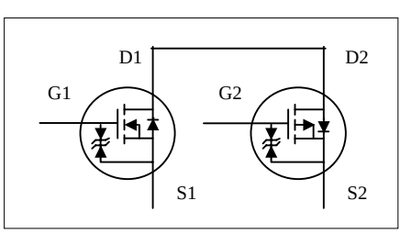


TO-252-4L

N-CH	BV_{DSS}	30V
	$R_{DS(ON)}$	24mΩ
	I_D	9A
P-CH	BV_{DSS}	-30V
	$R_{DS(ON)}$	36mΩ
	I_D	-8A

Description

Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.



Absolute Maximum Ratings

Symbol	Parameter	Rating		Units
		N-channel	P-channel	
V_{DS}	Drain-Source Voltage	30	-30	V
V_{GS}	Gate-Source Voltage	±20	±20	V
I_D@T_A=25℃	Continuous Drain Current[3]	9	-8	A
I_D@T_A=70℃	Continuous Drain Current[3]	7.2	-6.4	A
I_{DM}	Pulsed Drain Current[1]	50	-50	A
P_D@T_A=25℃	Total Power Dissipation	3.1		W
T_{STG}	Storage Temperature Range	-55 to 150		℃
T_J	Operating Junction Temperature Range	-55 to 150		℃

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-c	Maximum Thermal Resistance, Junction-case	8	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient[3]	40	℃/W

N-CH Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	30	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=6A	-	-	24	mΩ
		V_{GS}=4.5V, I_D=4A	-	-	32	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1	-	3	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=6A	-	17	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V, V_{GS}=0V	-	-	10	uA
	Drain-Source Leakage Current (T_j=70°C)	V_{DS}=24V, V_{GS}=0V	-	-	25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±20V, V_{DS}=0V	-	-	±30	uA
Q_g	Total Gate Charge[2]	I_D=6A	-	8.3	13	nC
Q_{gs}	Gate-Source Charge	V_{DS}=24V	-	1.5	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	4	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=15V	-	5	-	ns
t_r	Rise Time	I_D=6A	-	18	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=10V	-	18	-	ns
t_f	Fall Time	R_D=2.5Ω	-	4	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	575	920	pF
C_{oss}	Output Capacitance	V_{DS}=25V	-	100	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	70	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=6A, V_{GS}=0V	-	-	1.3	V
t_{rr}	Reverse Recovery Time[2]	I_S=6A, V_{GS}=0V	-	19	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	14	-	nC

P-CH Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	-30	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V, I_D=-5A	-	-	36	mΩ
		V_{GS}=-4.5V, I_D=-3A	-	-	48	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-1	-	-3	V
g_{fs}	Forward Transconductance	V_{DS}=-10V, I_D=-5A	-	12	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-30V, V_{GS}=0V	-	-	-10	uA
	Drain-Source Leakage Current (T_j=70°C)	V_{DS}=-24V, V_{GS}=0V	-	-	-25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±20V, V_{DS}=0V	-	-	±30	uA
Q_g	Total Gate Charge[2]	I_D=-5A	-	12.6	20	nC
Q_{gs}	Gate-Source Charge	V_{DS}=-24V	-	2.4	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=-4.5V	-	6.2	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=-15V	-	8	-	ns
t_r	Rise Time	I_D=-5A	-	16	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=-10V	-	26	-	ns
t_f	Fall Time	R_D=3Ω	-	41	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	1045	1670	pF
C_{oss}	Output Capacitance	V_{DS}=-25V	-	220	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	150	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=-5A, V_{GS}=0V	-	-	-1.3	V
t_{rr}	Reverse Recovery Time[2]	I_S=-5A, V_{GS}=0V	-	23	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=-100A/μs	-	15	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.N-CH , P-CH are same , mounted on 2oz FR4 board t ≦10s.

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

APEC DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

APEC RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN.

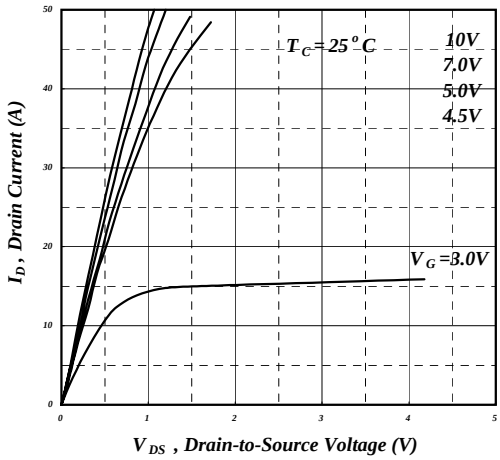


Fig 1. Typical Output Characteristics

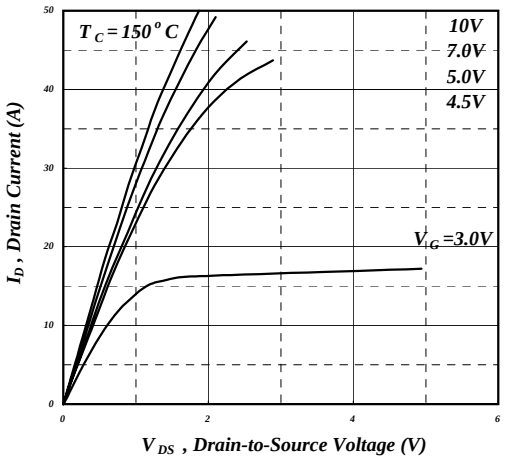


Fig 2. Typical Output Characteristics

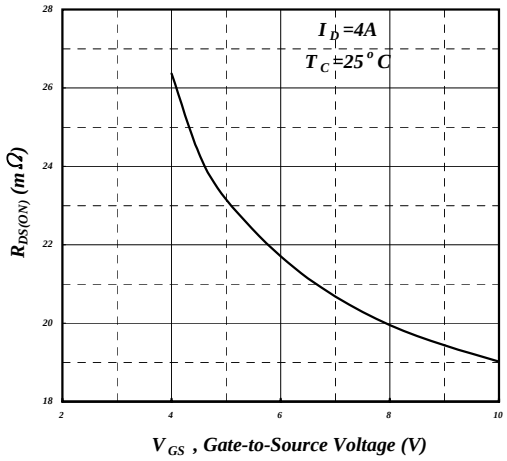


Fig 3. On-Resistance v.s. Gate Voltage

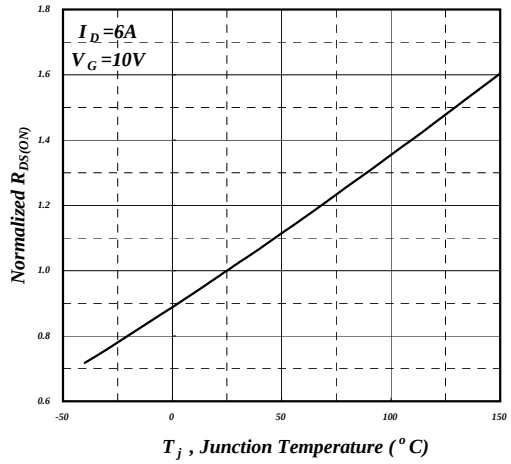


Fig 4. Normalized On-Resistance v.s. Junction Temperature

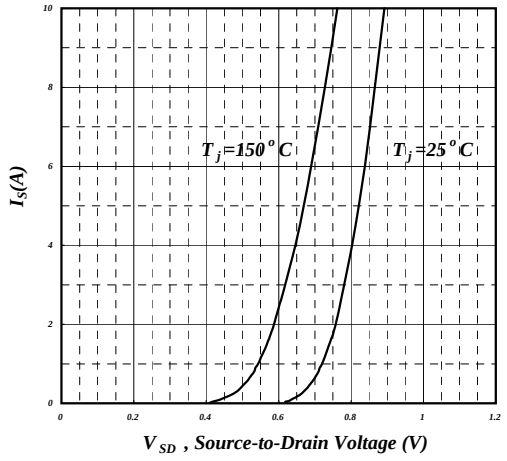


Fig 5. Forward Characteristic of Reverse Diode

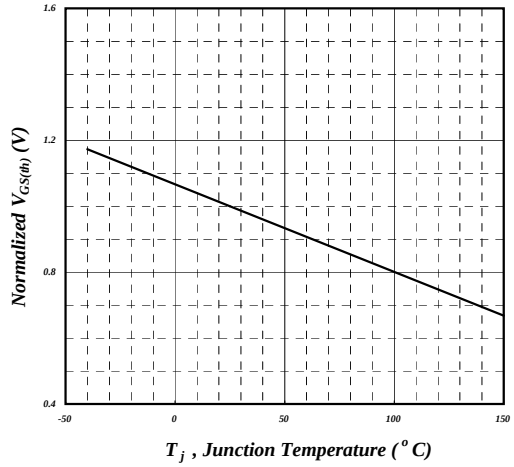


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

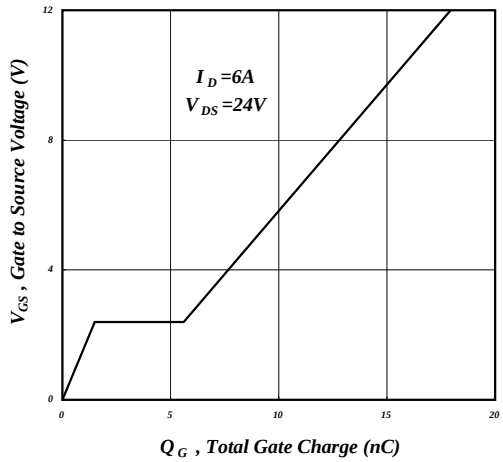


Fig 7. Gate Charge Characteristics

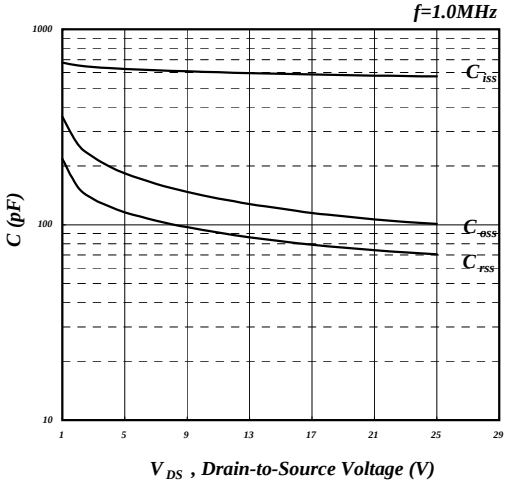


Fig 8. Typical Capacitance Characteristics

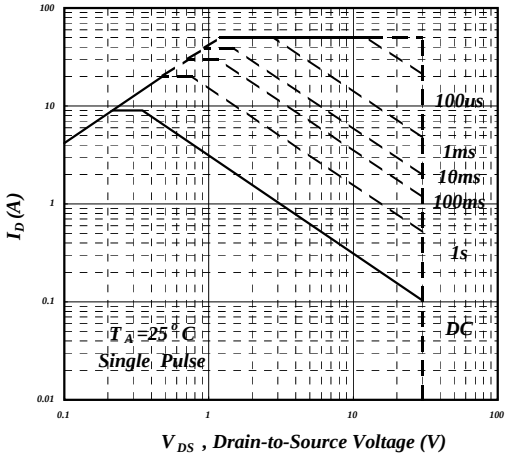


Fig 9. Maximum Safe Operating Area

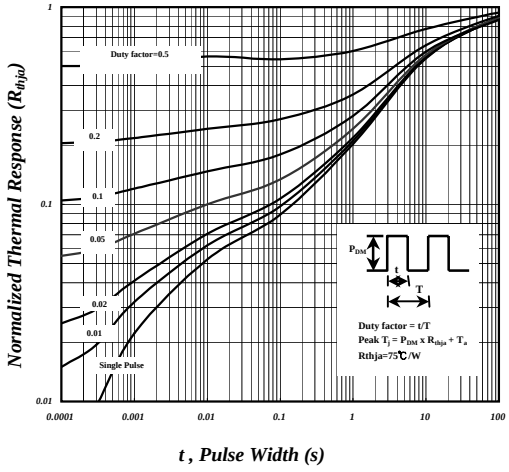


Fig 10. Effective Transient Thermal Impedance

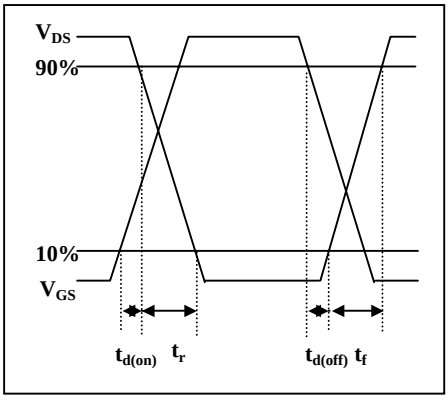


Fig 11. Switching Time Waveform

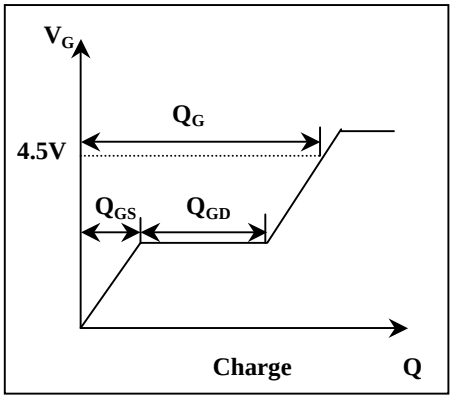
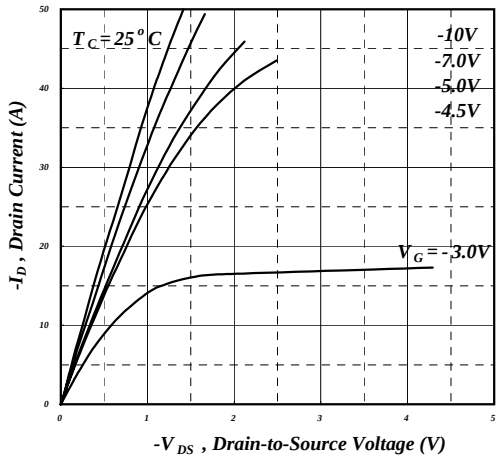


Fig 12. Gate Charge Waveform



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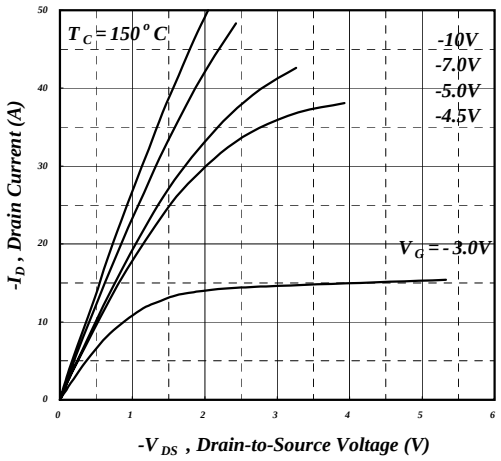
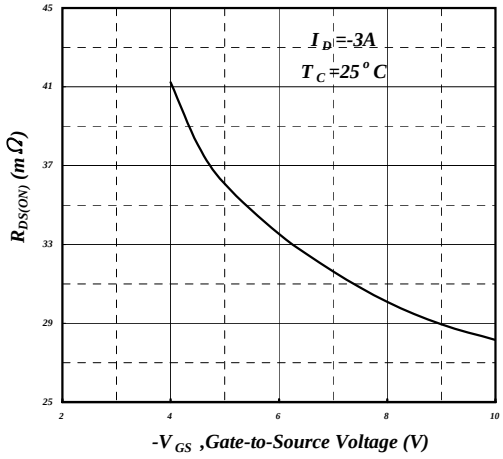


Fig 2. Typical Output Characteristics



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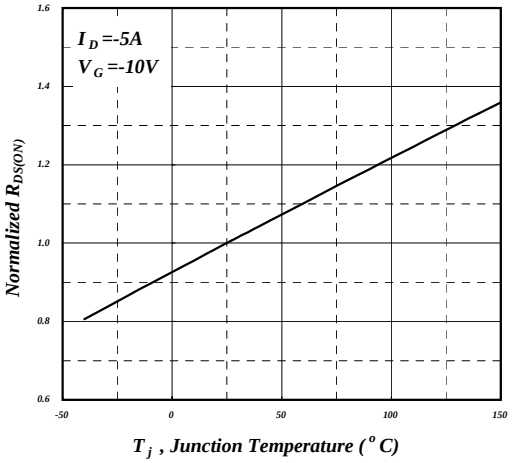
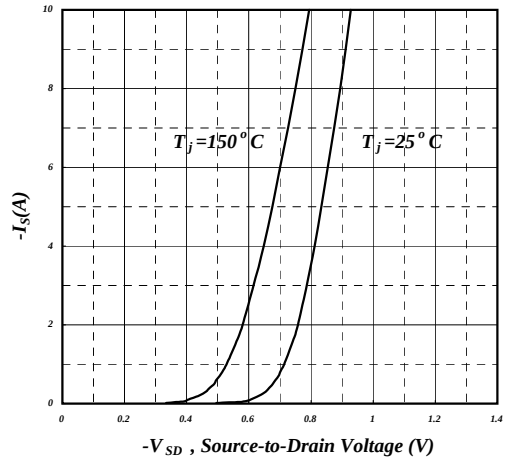


Fig 4. Normalized On-Resistance v.s. Junction Temperature



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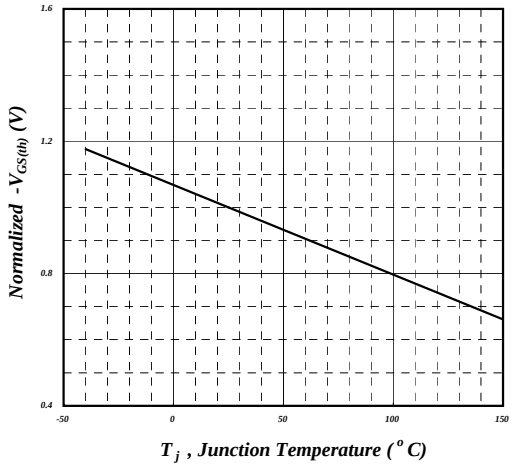
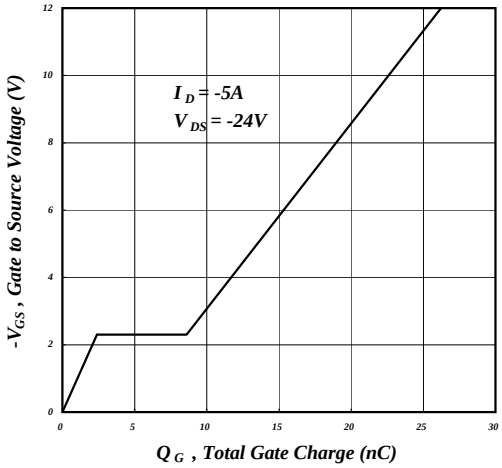


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

P-Channel



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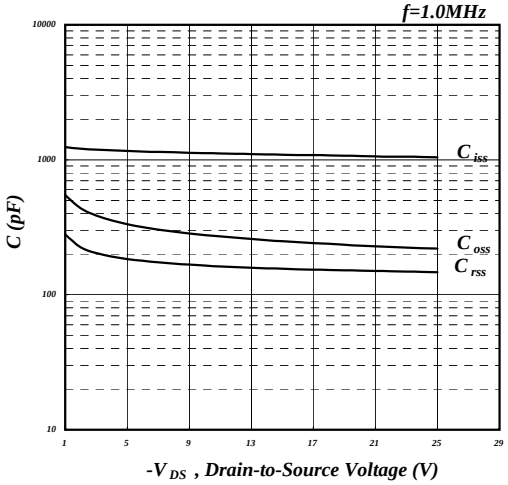

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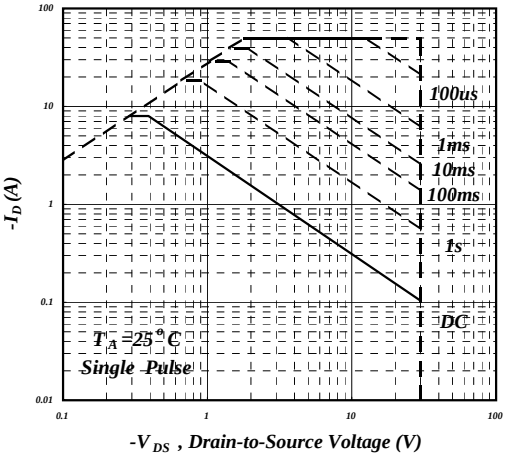

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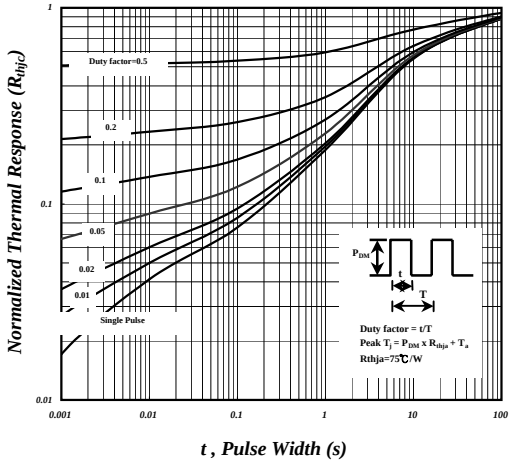

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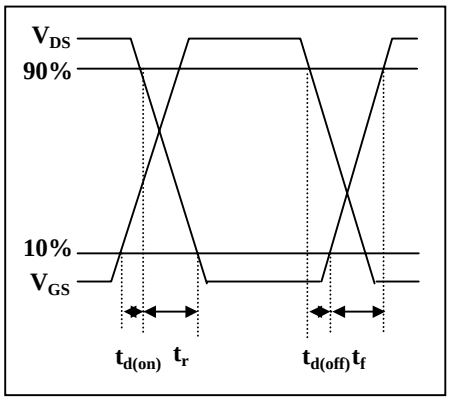

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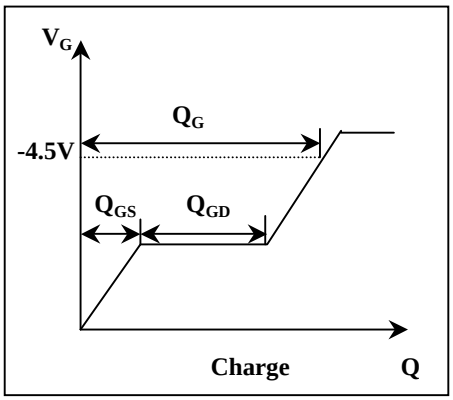

Fig 12. Gate Charge Waveform