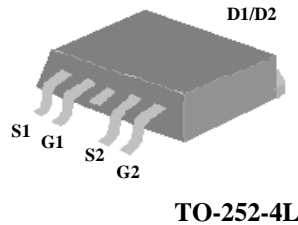




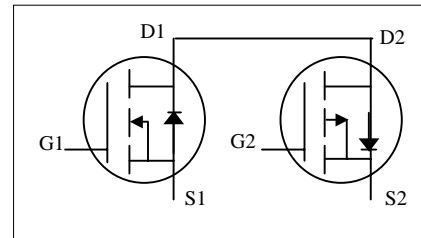
- ▼ Simple Drive Requirement
- ▼ Good Thermal Performance
- ▼ Fast Switching Performance
- ▼ RoHS Compliant



N-CH	BV_{DSS}	35V
	$R_{DS(ON)}$	30mΩ
	I_D	15A
P-CH	BV_{DSS}	-35V
	$R_{DS(ON)}$	48mΩ
	I_D	-12A

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	35	-35	V
V_{GS}	Gate-Source Voltage	±20	±20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	15	-12	A
$I_D@T_C=100^\circ C$	Continuous Drain Current	9	-7	A
I_{DM}	Pulsed Drain Current ¹	50	-50	A
$P_D@T_C=25^\circ C$	Total Power Dissipation	10.4		W
	Linear Derating Factor	0.083		W/°C
T_{STG}	Storage Temperature Range	-55 to 150		°C
T_J	Operating Junction Temperature Range	-55 to 150		°C

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	12	°C/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient ³	110	°C/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	35	-	-	V
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =1mA	-	0.03	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =8A	-	-	30	mΩ
		V _{GS} =4.5V, I _D =6A	-	-	40	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 =8A	-	13	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =35V, V _{GS} =0V	-	-	1	uA
	Drain-Source Leakage Current (T _j =125°C)	V _{DS} =28V, V _{GS} =0V	-	-	250	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =8A V _{DS} =28V V _{GS} =4.5V	-	11	18	nC
Q _{gs}	Gate-Source Charge		-	3	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge		-	6	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =18V I _D =1A R _G =3.3Ω, V _{GS} =10V R _D =18Ω	-	12	-	ns
t _r	Rise Time		-	7	-	ns
t _{d(off)}	Turn-off Delay Time		-	22	-	ns
t _f	Fall Time		-	6	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V V _{DS} =25V f=1.0MHz	-	830	1330	pF
C _{oss}	Output Capacitance		-	150	-	pF
C _{rss}	Reverse Transfer Capacitance		-	110	-	pF
R _g	Gate Resistance	f=1.0MHz	-	1.1	1.7	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =8A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time ²	I _S =8A, V _{GS} =0V di/dt=100A/μs	-	18	-	ns
Q _{rr}	Reverse Recovery Charge		-	12	-	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	-35	-	-	V
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =-1mA	-	-0.03	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-6A	-	-	48	mΩ
		V _{GS} =-4.5V, I _D =-4A	-	-	70	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	-	10	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-35V, V _{GS} =0V	-	-	-1	uA
	Drain-Source Leakage Current (T _j =125°C)	V _{DS} =-28V, V _{GS} =0V	-	-	-250	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =-6A	-	10	19	nC
Q _{gs}	Gate-Source Charge	V _{DS} =-28V	-	2	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =-4.5V	-	6	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =-18V	-	10	-	ns
t _r	Rise Time	I _D =-1A	-	6	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω, V _{GS} =-10V	-	26	-	ns
t _f	Fall Time	R _D =18Ω	-	7	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	690	1100	pF
C _{oss}	Output Capacitance	V _{DS} =-25V	-	165	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	130	-	pF
R _g	Gate Resistance	f=1.0MHz	-	5	7.5	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =-6A, V _{GS} =0V	-	-	-1.2	V
t _{rr}	Reverse Recovery Time ²	I _S =-6A, V _{GS} =0V	-	20	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=-100A/μs	-	12	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse width ≤300us , duty cycle ≤2%.
- 3.N-CH , P-CH are same .

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.

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N-Channel

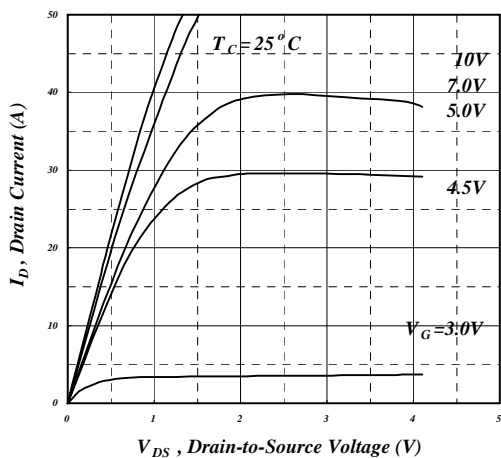


Fig 1. Typical Output Characteristics

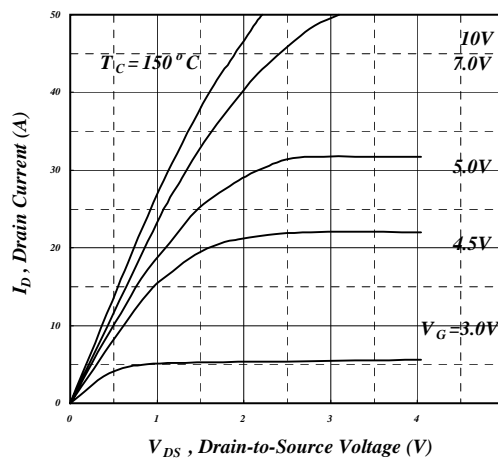


Fig 2. Typical Output Characteristics

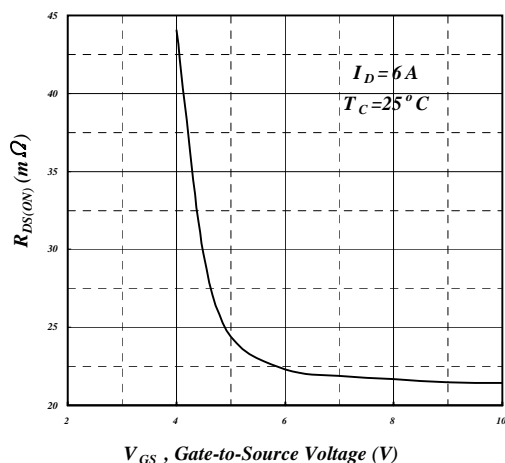


Fig 3. On-Resistance v.s. Gate Voltage

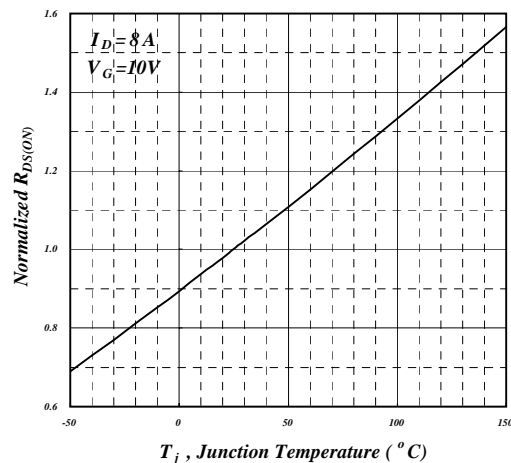


Fig 4. Normalized On-Resistance v.s. Junction Temperature

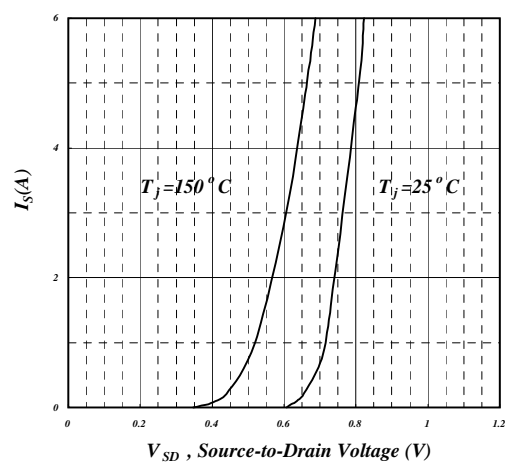


Fig 5. Forward Characteristic of Reverse Diode

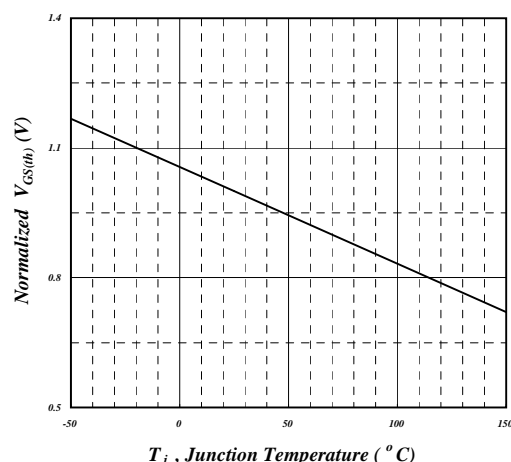


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



N-Channel

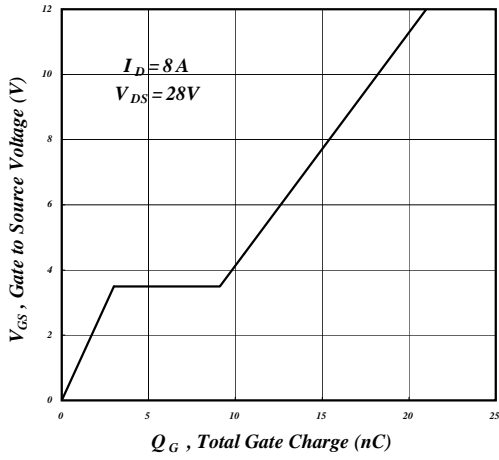


Fig 7. Gate Charge Characteristics

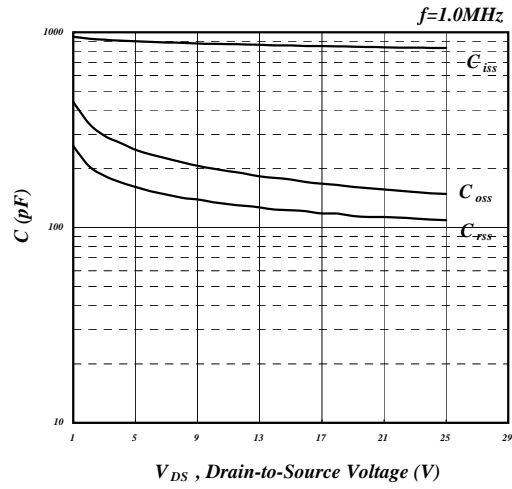


Fig 8. Typical Capacitance Characteristics

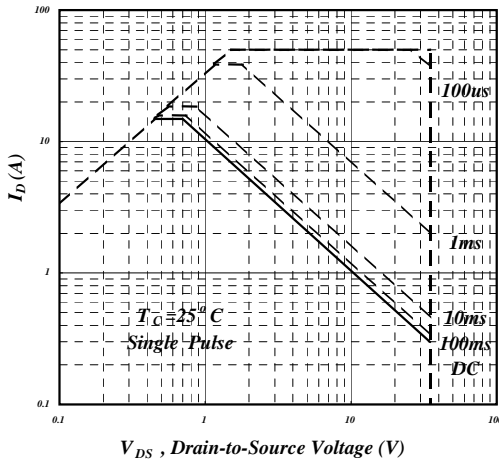


Fig 9. Maximum Safe Operating Area

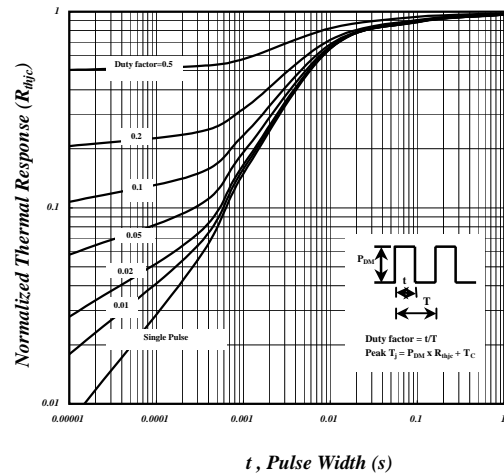


Fig 10. Effective Transient Thermal Impedance

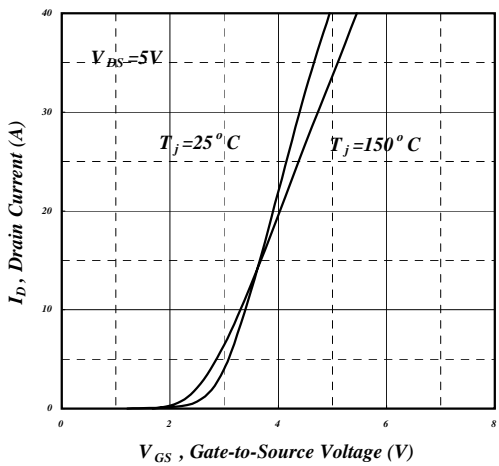


Fig 11. Transfer Characteristics

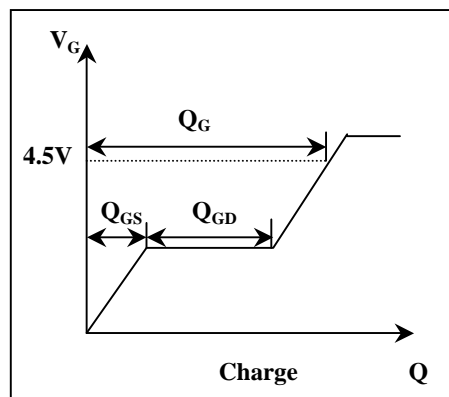


Fig 12. Gate Charge Waveform



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P-Channel

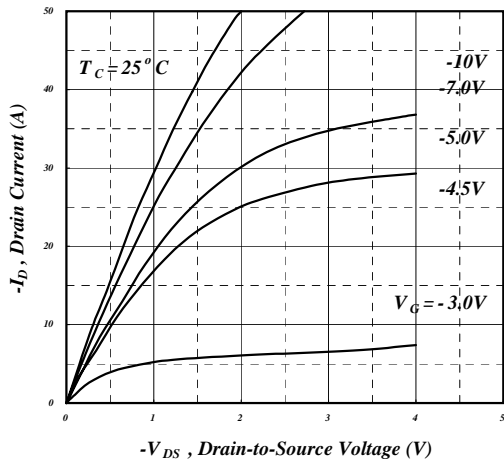


Fig 1. Typical Output Characteristics

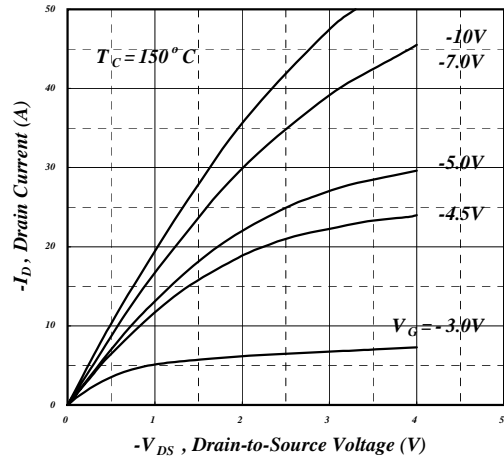


Fig 2. Typical Output Characteristics

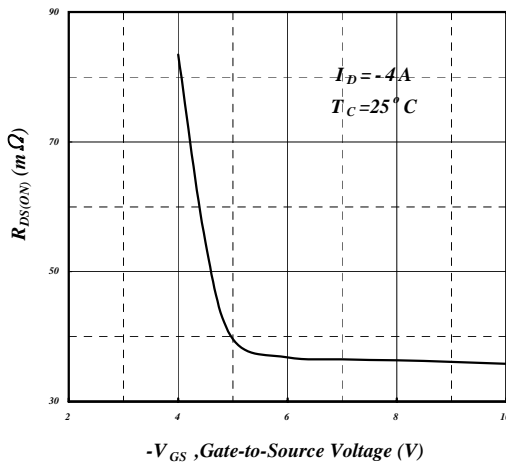


Fig 3. On-Resistance v.s. Gate Voltage

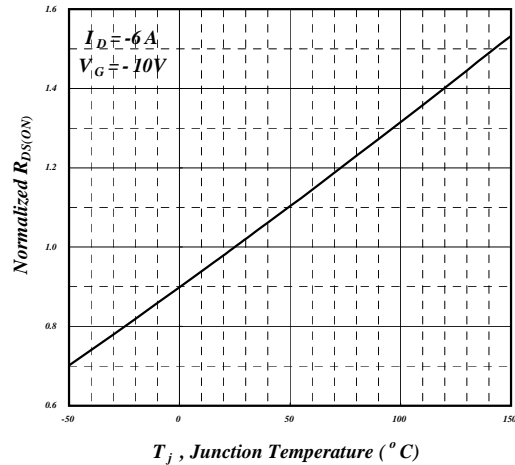


Fig 4. Normalized On-Resistance v.s. Junction Temperature

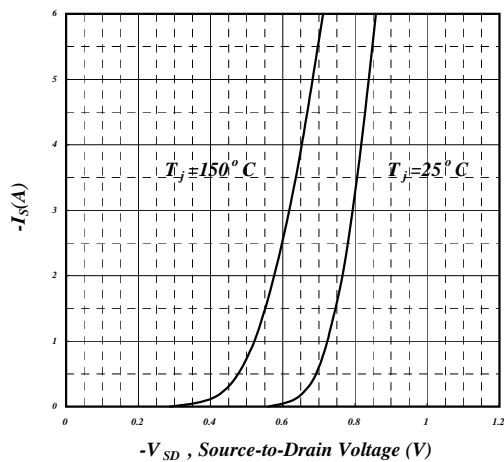


Fig 5. Forward Characteristic of Reverse Diode

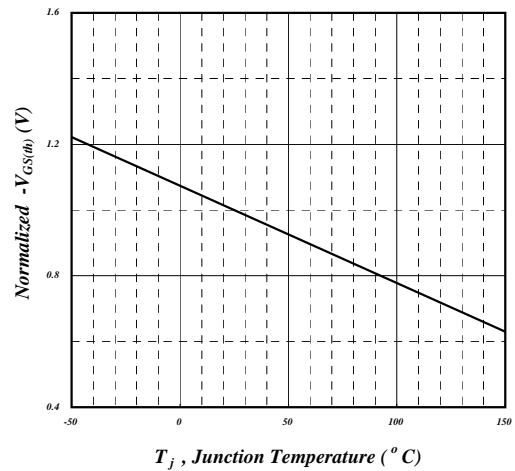


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



P-Channel

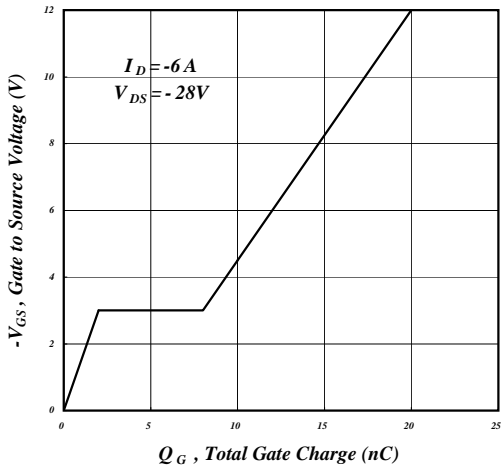


Fig 7. Gate Charge Characteristics

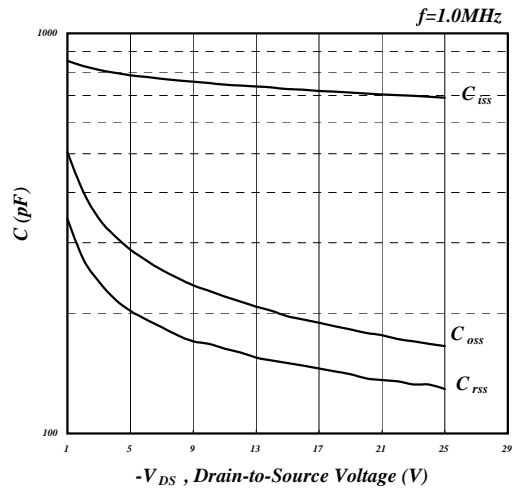


Fig 8. Typical Capacitance Characteristics

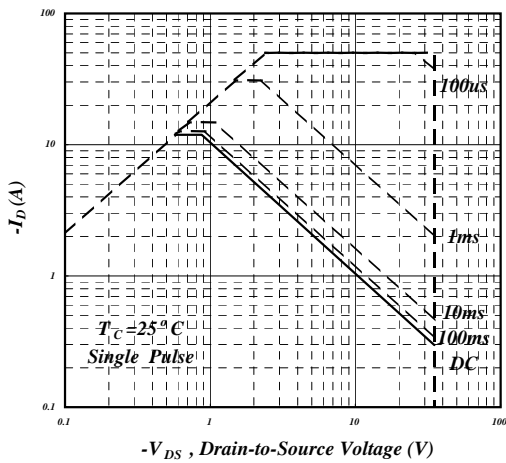


Fig 9. Maximum Safe Operating Area

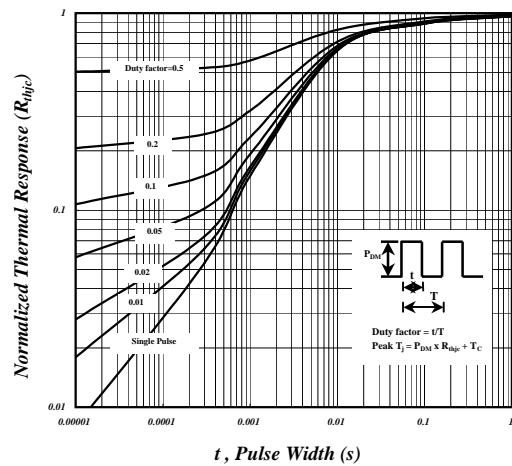


Fig 10. Effective Transient Thermal Impedance

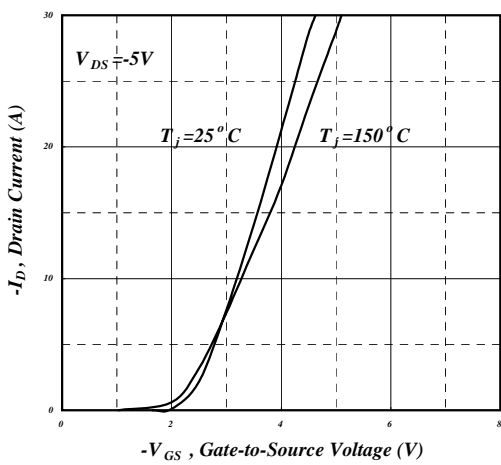


Fig 11. Transfer Characteristics

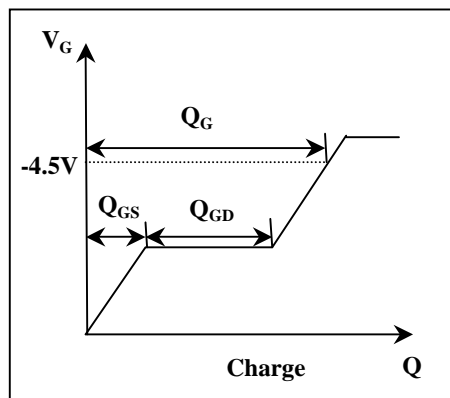


Fig 12. Gate Charge Waveform