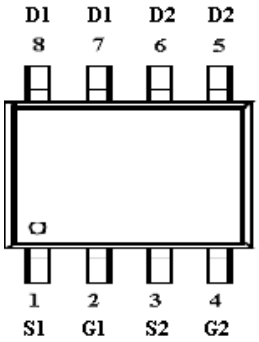
SPC4533W
N & P Pair Enhancement Mode MOSFET

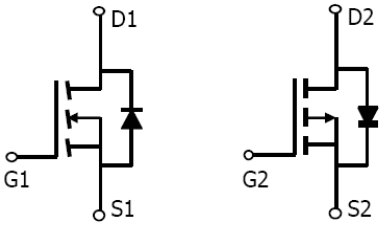
DESCRIPTION
The SPC4533W is the N- and P-Channel enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance. These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where high-side switching, low in-line power loss, and resistance to transients are needed.

FEATURES
- N-Channel
  30V/10A,$R_{DS(ON)}$=25mΩ@V_{GS}=10V
  30V/8.0A,$R_{DS(ON)}$=36mΩ@V_{GS}=4.5V
- P-Channel
  -30V/-6.0A,$R_{DS(ON)}$=42mΩ@V_{GS}=-10V
  -30V/-3.0A,$R_{DS(ON)}$=78mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP–8 package design

APPLICATIONS
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION(SOP–8)





n-channel p-channel

PART MARKING

A : Lot Code
B : Date Code

SPC4533W
N & P Pair Enhancement Mode MOSFET

PIN DESCRIPTION

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	S2	Source 2
4	G2	Gate 2
5	D2	Drain 2
6	D2	Drain 2
7	D1	Drain 1
8	D1	Drain 1

ORDERING INFORMATION

Part Number	Package	Part Marking
SPC4533WS8RGB	SOP-8	SPC4533W

※ SPC4533WS8RGB : 13" Tape Reel ; Pb – Free ; Halogen - Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical		Unit
			N-Channel	P-Channel	
Drain-Source Voltage		V_{DSS}	30	-30	V
Gate –Source Voltage		V_{GSS}	±20	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	10	-6.0	A
	T_A=70℃		6	-4.0	
Pulsed Drain Current		I_{DM}	20	-12	A
Power Dissipation	T_A=25℃	P_D	2.0		W
Operating Junction Temperature		T_J	-55/150		℃
Storage Temperature Range		T_{STG}	-55/150		℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	80	80	℃/W

N CHANNEL ELECTRICAL CHARACTERISTICS

(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0		2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V			1	uA
		V_{DS}=24V,V_{GS}=0V T_J=55℃			5	
On-State Drain Current	$I_{D(on)}$	V_{DS}≥5V,V_{GS} =10V	25			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}= 10V,I_D=10A		18	25	mΩ
		V_{GS}=4.5V,I_D=5.6A		25	36	
Forward Transconductance	gfs	V_{DS}=15V,I_D=10A		10		S
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS} =0V			1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=20V,V_{GS}=4.5V I_D= 10A		7.2		nC
Gate-Source Charge	Q_{gs}			1.4		
Gate-Drain Charge	Q_{gd}			2.2		
Input Capacitance	C_{iss}	V_{DS}=15V_{GS}=0V f=1MHz		570		pF
Output Capacitance	C_{oss}			81		
Reverse Transfer Capacitance	C_{rss}			65		
Turn-On Time	$t_{d(on)}$	V_{DD}=12V, I_D=5.0A, V_{GEN}=10V, R_G=3.3Ω		4.1		nS
	t_r			9.8		
Turn-Off Time	$t_{d(off)}$			15.5		
	t_f			6.1		

P CHANNEL ELECTRICAL CHARACTERISTICS

(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250uA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-1.0		-2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V			-1	uA
		V_{DS}=-24V,V_{GS}=0V T_J=55℃			-5	
On-State Drain Current	$I_{D(on)}$	V_{DS}≦-5V,V_{GS}=-10V	-6			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=- 10V,I_D=-6A		0.035	0.042	Ω
		V_{GS}=- 4.5V,I_D=-3A		0.065	0.078	
Forward Transconductance	gfs	V_{DS}=-10.0V,I_D=-6A		6		S
Diode Forward Voltage	V_{SD}	I_S=-6A,V_{GS}=0V			-1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-20V, V_{GS}=-4.5V I_D=-6A		6.4		nC
Gate-Source Charge	Q_{gs}			2.7		
Gate-Drain Charge	Q_{gd}			3.1		
Input Capacitance	C_{iss}	V_{DS}=-24V,V_{GS}=0V f=1MHz		650		pF
Output Capacitance	C_{oss}			270		
Reverse Transfer Capacitance	C_{rss}			104		
Turn-On Time	$t_{d(on)}$	V_{DD}=-12V, I_D=-5.0A, V_{GEN}=-10V R_G=3.3Ω		9		ns
	t_r			16		
Turn-Off Time	$t_{d(off)}$			21		
	t_f			22		

N CHANNEL TYPICAL CHARACTERISTICS

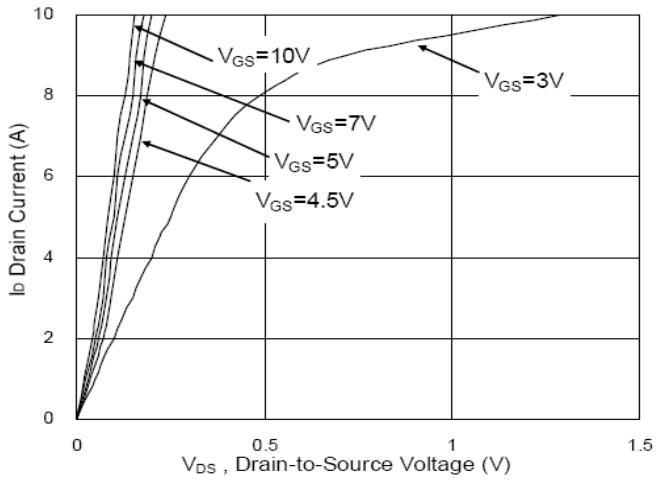


Fig. 1 Typical Output Characteristics

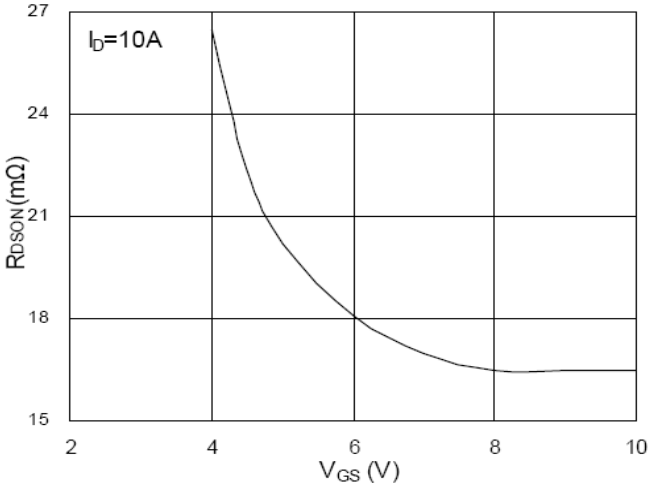


Fig. 2 On-Resistance vs. Gate Voltage

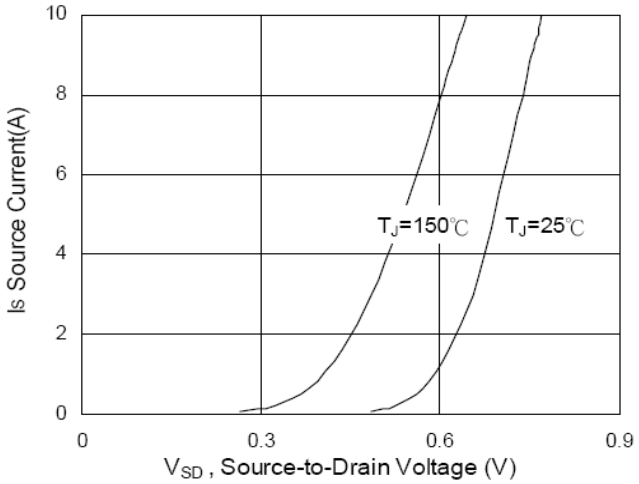


Fig. 3 Forward Characteristics of Diode

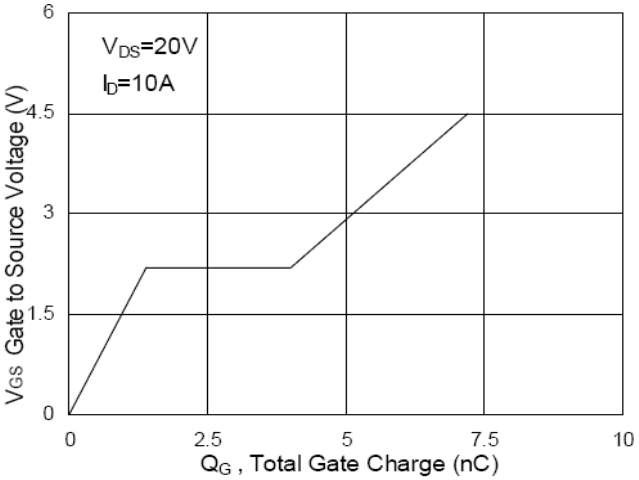


Fig. 4 Gate Charge Characteristics

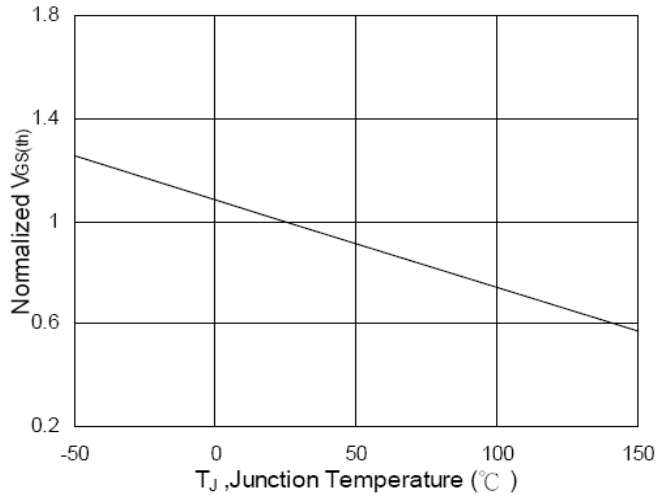


Fig. 5 Vgs vs. Junction Temperature

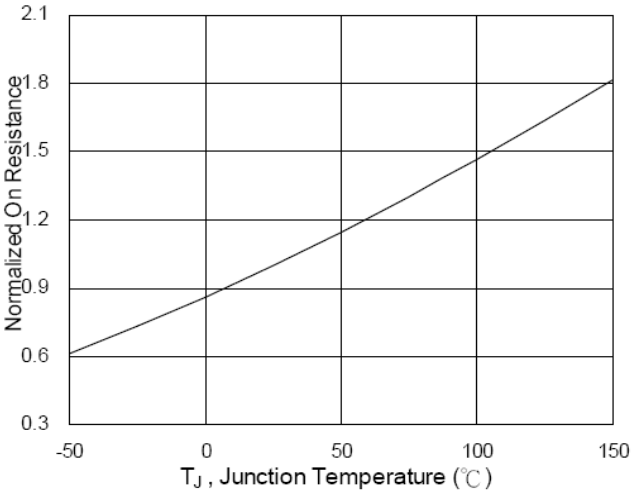


Fig. 6 On-Resistance vs. Junction Temperature

N CHANNEL TYPICAL CHARACTERISTICS

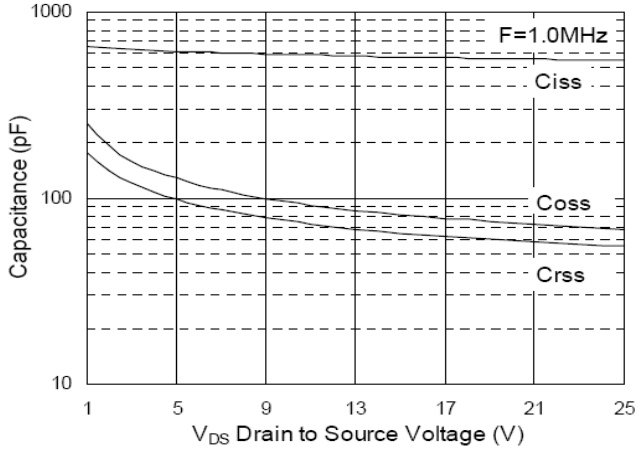


Fig. 7 Typical Capacitance Characteristics

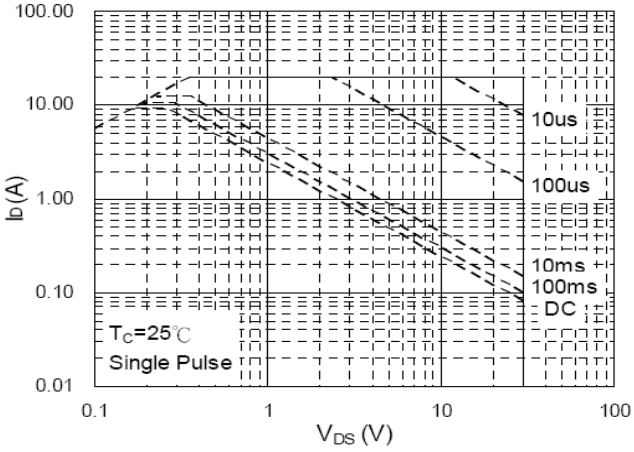


Fig. 8 Maximum Safe Operation Area

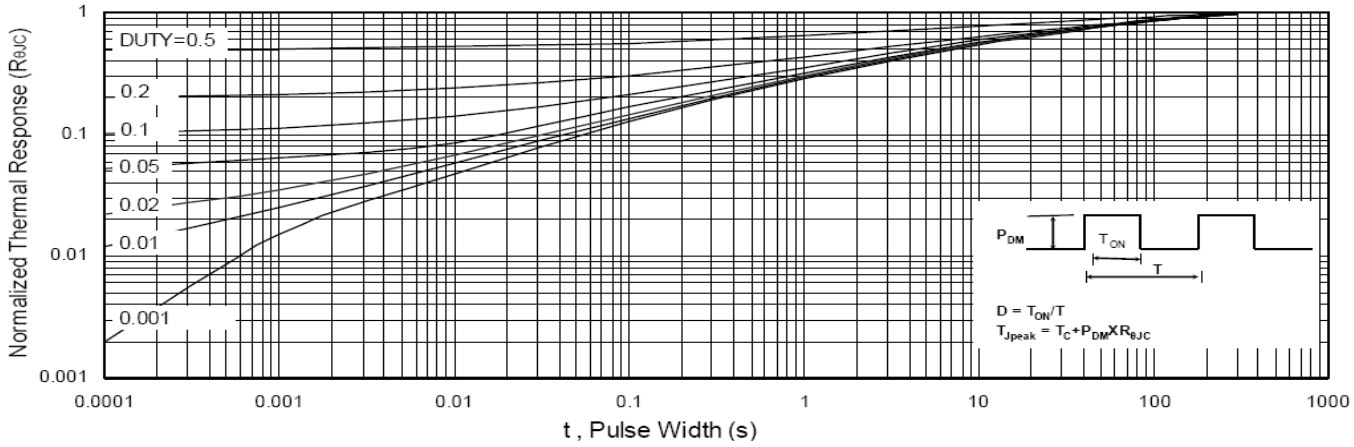


Fig. 9 Effective Transient Thermal Impedence

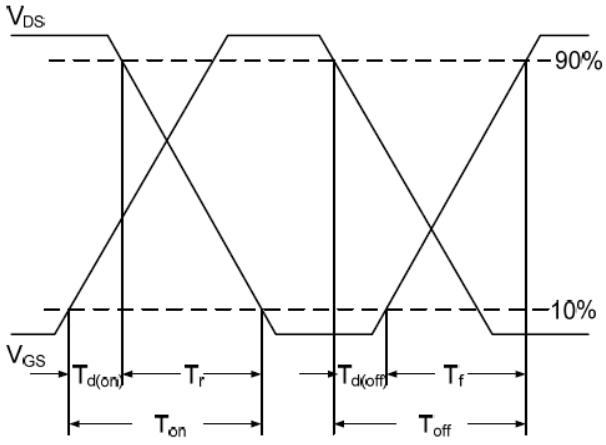


Fig. 10 Switching Time Waveform

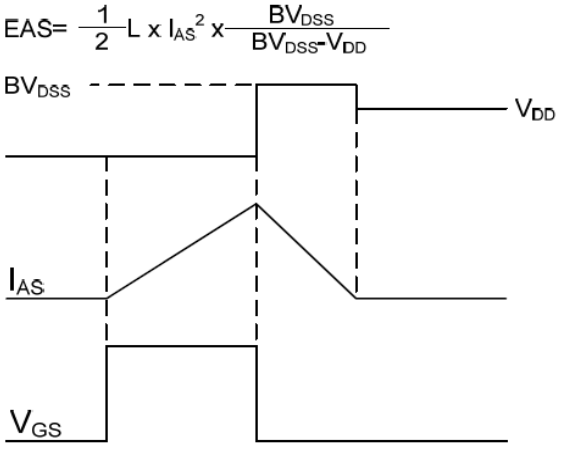


Fig. 11 Unclamped Inductive Waveform

P CHAEENL TYPICAL CHARACTERISTICS

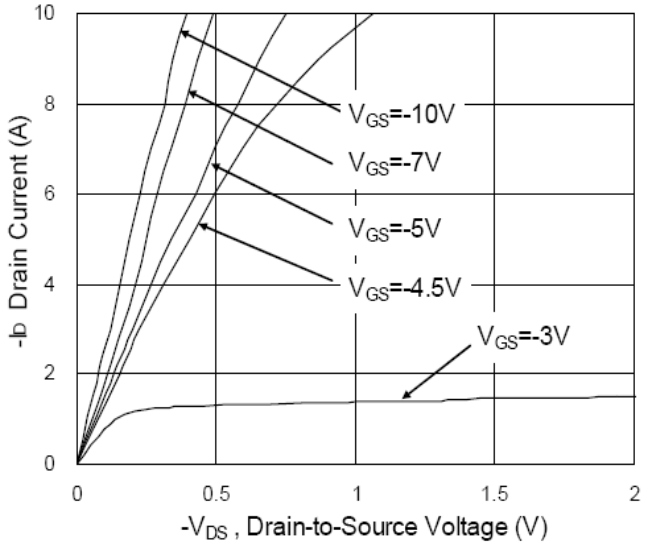


Fig. 1 Typical Output Characteristics

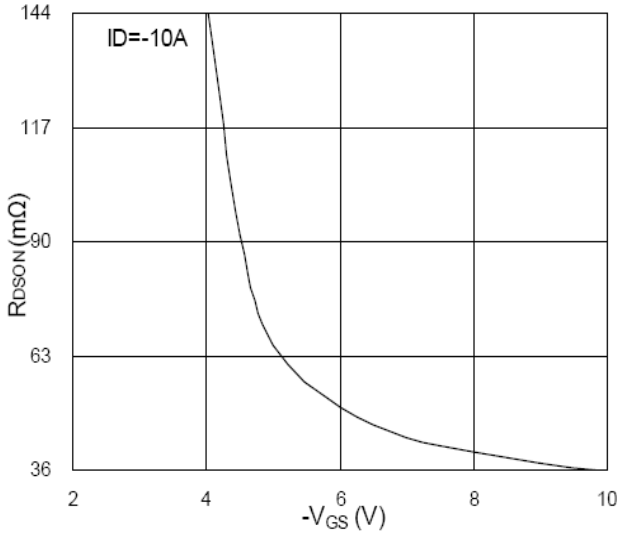


Fig. 2 On-Resistance vs. Gate Voltage

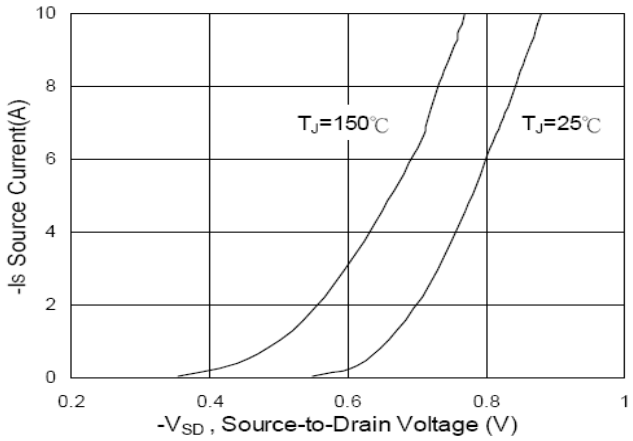


Fig. 3 Forward characteristics of Diodes

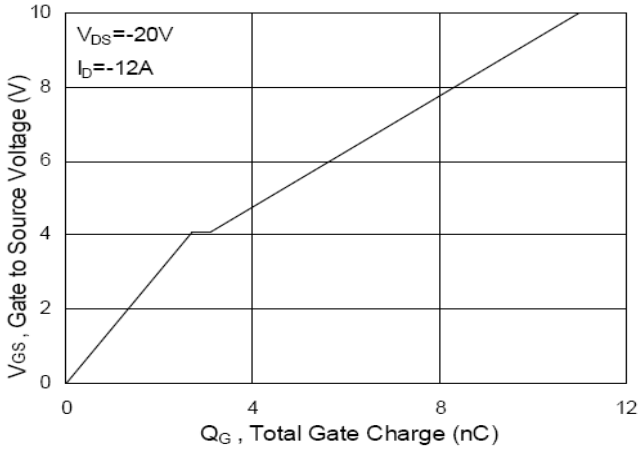
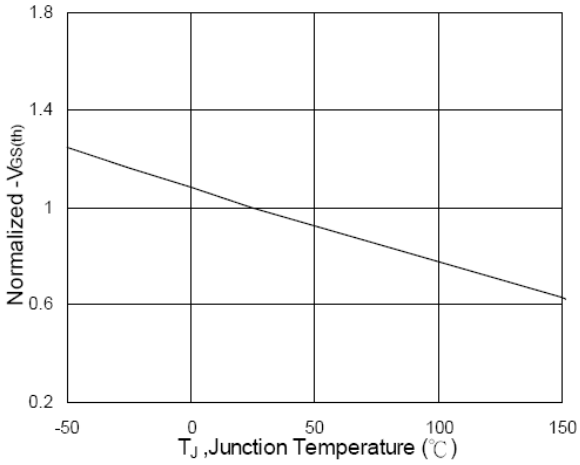


Fig. 4 Gate Charge Characteristics



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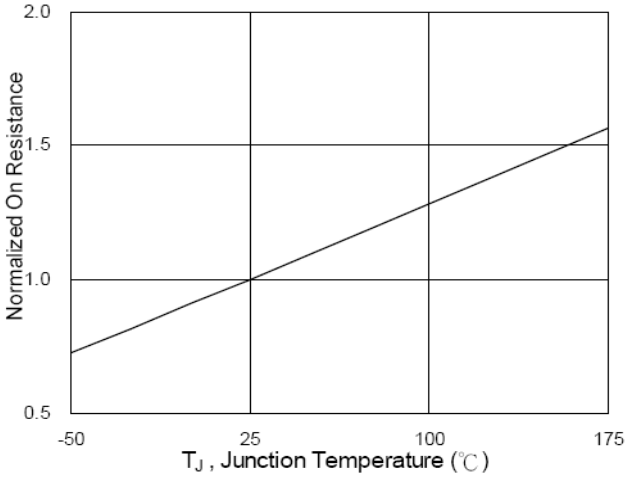

Fig. 6 On-Resistance vs Junction Temp

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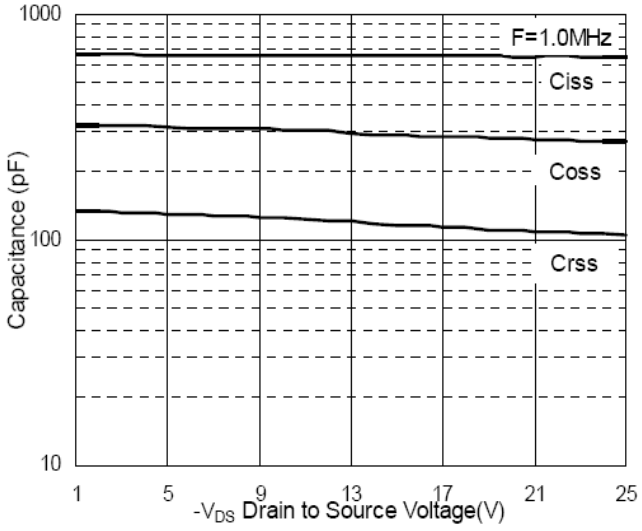

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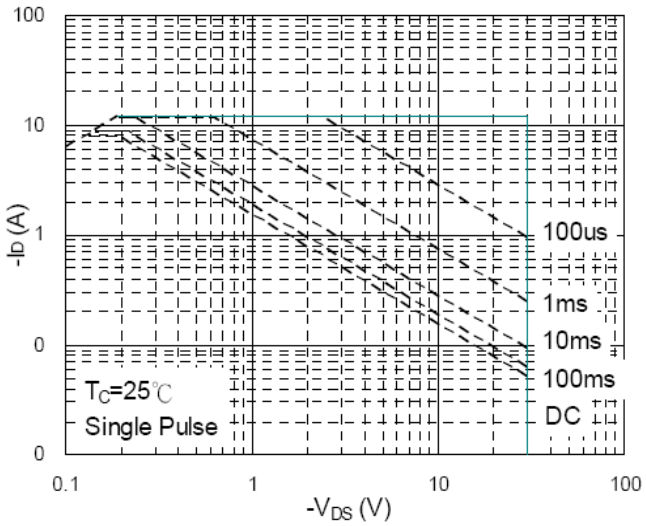

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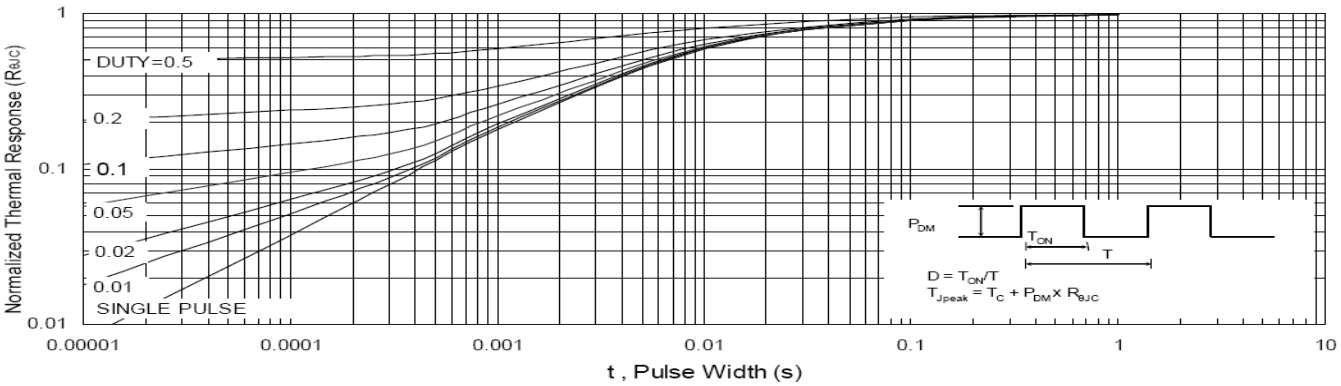

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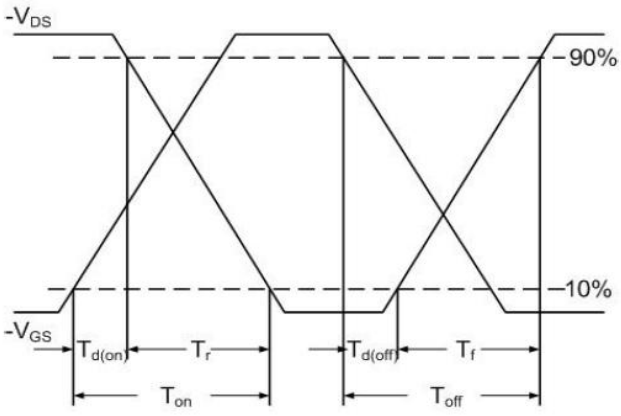

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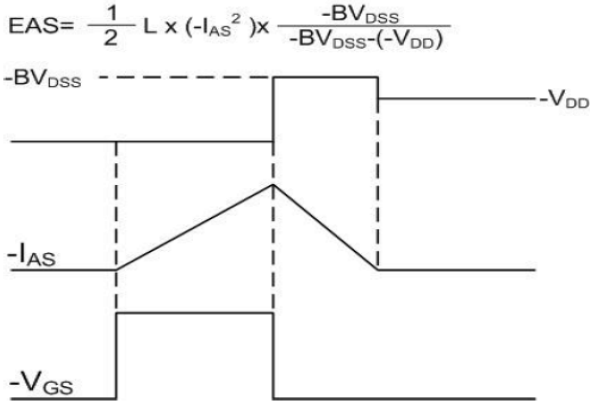

Fig. 11 Unclamped Inductive Waveform

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