



SPC6605

N & P Pair Enhancement Mode MOSFET

DESCRIPTION

The SPC6605 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.

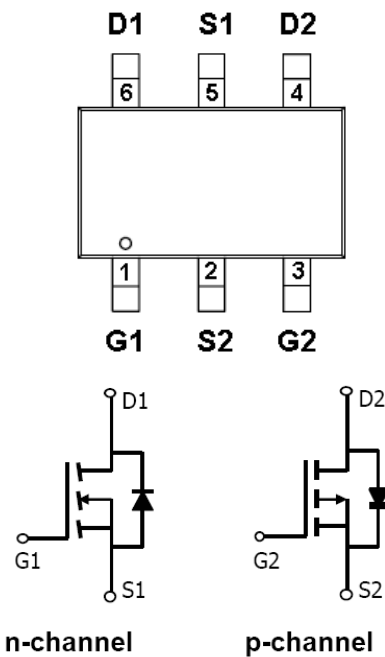
FEATURES

- ◆ N-Channel
20V/3.6A, $R_{DS(ON)}=97m\Omega@V_{GS}=4.5V$
20V/3.1A, $R_{DS(ON)}=113m\Omega@V_{GS}=2.5V$
- ◆ P-Channel
-20V/-2.4A, $R_{DS(ON)}=128m\Omega@V_{GS}=-4.5V$
-20V/-2.0A, $R_{DS(ON)}=188m\Omega@V_{GS}=-2.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ TSOT-23--6P package design

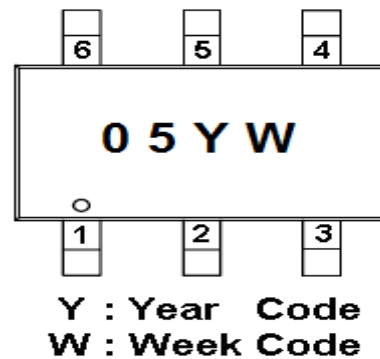
APPLICATIONS

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

PIN CONFIGURATION(TSOT--23--6P)



PART MARKING





SPC6605

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PIN DESCRIPTION

Pin	Symbol	Description
1	G1	Gate 1
2	S2	Source 2
3	G2	Gate 2
4	D2	Drain 2
5	S1	Source 1
6	D1	Drain1

ORDERING INFORMATION

Part Number	Package	Part Marking
SPC6605TS26RGB	TSOT--23- 6P	05YW

※ Week Code : A ~ Z(1 ~ 26) ; a ~ z(27 ~ 52)

※ SPC6605TS26RGB : Tape Reel ; Pb – Free ; Halogen -Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical		Unit	
		N-Channel	P-Channel		
Drain-Source Voltage	V _{DSS}	20	-20	V	
Gate –Source Voltage	V _{GSS}	±12	±12	V	
Continuous Drain Current(T _J =150°C)	I _D	TA=25°C	-2.4	A	
		TA=70°C	-1.8		
Pulsed Drain Current	I _{DM}	10	-8	A	
Continuous Source Current(Diode Conduction)	I _S	1.6	-1.4	A	
Power Dissipation	P _D	TA=25°C	1.15	W	
		TA=70°C	0.75		
Operating Junction Temperature	T _J	-55/150		°C	
Storage Temperature Range	T _{STG}	-55/150		°C	
Thermal Resistance-Junction to Ambient	R _{θJA}	T ≤ 10sec	50	52	°C/W
		Steady State	90	95	



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ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D = 250uA	N-Ch	20		V	
		V _{GS} =0V, I _D =-250uA	P-Ch	-20			
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	N-Ch	0.45	1.2		
		V _{DS} =V _{GS} , I _D =-250uA	P-Ch	-0.45	-1.2		
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V	N-Ch		±100	nA	
		V _{DS} =0V, V _{GS} =±12V	P-Ch		±100		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20V, V _{GS} =0V	N-Ch		1	uA	
		V _{DS} =-20V, V _{GS} =0V	P-Ch		-1		
		V _{DS} = 20V, V _{GS} =0V T _J =55°C	N-Ch		10		
		V _{DS} =-20V, V _{GS} =0V T _J =55°C	P-Ch		-10		
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 4.5V, V _{GS} = 4.5V	N-Ch	6		A	
		V _{DS} ≤ -4.5V, V _{GS} =-4.5V	P-Ch	-6			
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =3.6A	N-Ch		0.085	0.097	Ω
		V _{GS} =-4.5V, I _D =-2.4A	P-Ch		0.115	0.128	
		V _{GS} =2.5V, I _D =3.1A	N-Ch		0.100	0.113	
		V _{GS} =-2.5V, I _D =-2.0A	P-Ch		0.165	0.188	
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =-3.4A	N-Ch		10	S	
		V _{DS} =-5V, I _D =-2.4A	P-Ch		6.5		
Diode Forward Voltage	V _{SD}	I _S =1.6A, V _{GS} =0V	N-Ch		0.85	1.2	V
		I _S =-1.6A, V _{GS} =0V	P-Ch		-0.8	-1.2	
Dynamic							
Total Gate Charge	Q _g	N-Channel V _{DS} =10V, V _{GS} =4.5V, I _D =3.6A P-Channel V _{DS} =-16V, V _{GS} =-4.5V, I _D =-2.A	N-Ch		4.4	nC	
Gate-Source Charge	Q _{gs}		P-Ch		7.5		
			N-Ch		0.6		
Gate-Drain Charge	Q _{gd}		P-Ch		1		
			N-Ch		1.9		
Input Capacitance	C _{iss}		P-Ch		3		
		N-Ch		145			
Output Capacitance	C _{oss}	P-Ch		7.5	pF		
		N-Ch		100			
Reverse Transfer Capacitance	C _{rss}	P-Ch		550			
		N-Ch		50			
Turn-On Time	t _{d(on)}	P-Ch		55		nS	
		N-Ch		5.2			
	t _r	P-Ch		8.5			
		N-Ch		37			
Turn-Off Time	t _{d(off)}	P-Ch		18			
		N-Ch		15			
	t _f	P-Ch		22			
		N-Ch		5.7			
		P-Ch		10			



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TYPICAL CHARACTERISTICS (P-Channel)

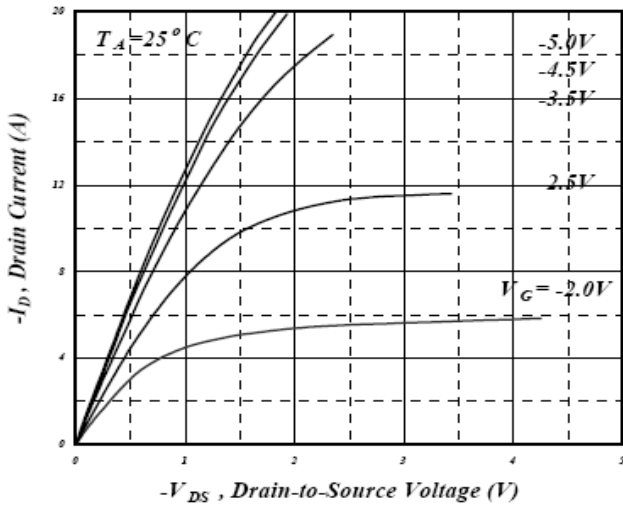


Fig 1. Typical Output Characteristics

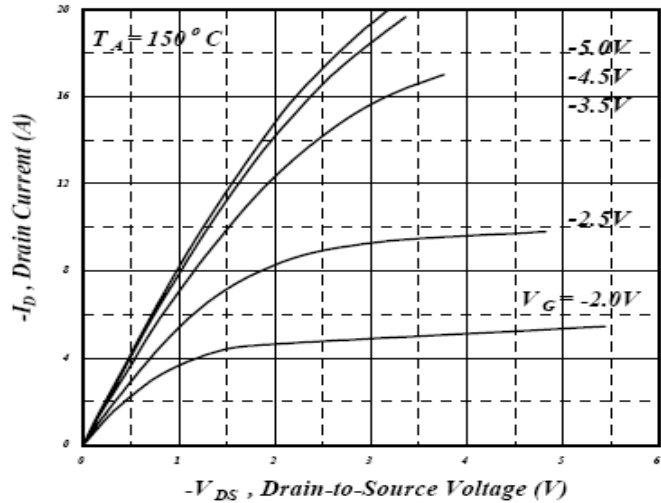


Fig 2. Typical Output Characteristics

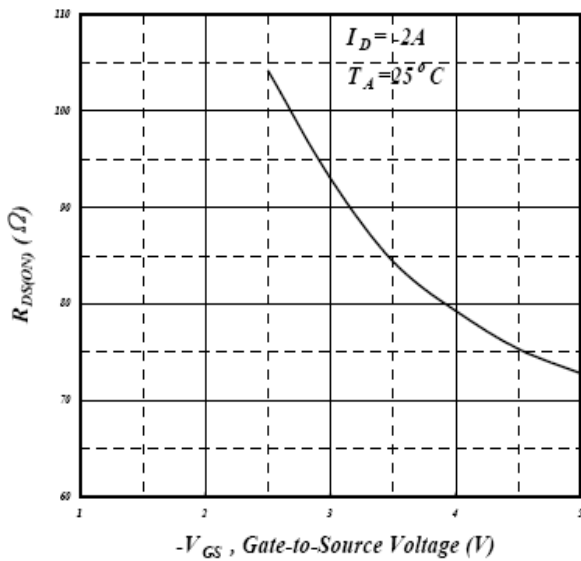


Fig 3. On-Resistance v.s. Gate Voltage

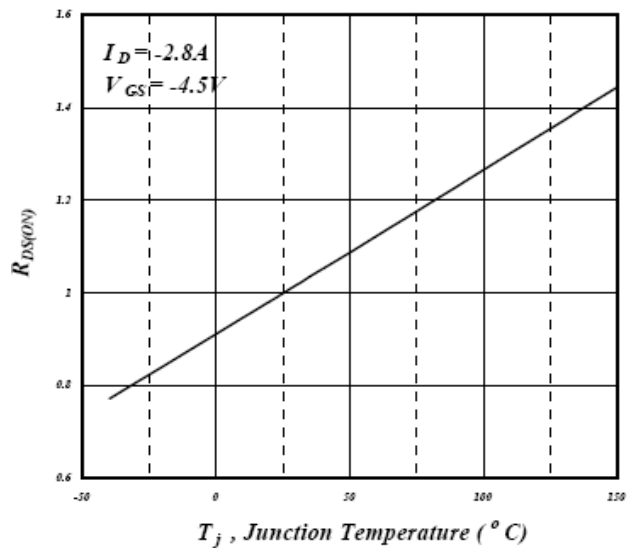


Fig 4. Normalized On-Resistance v.s. Junction Temperature



SPC6605 N & P Pair Enhancement Mode MOSFET

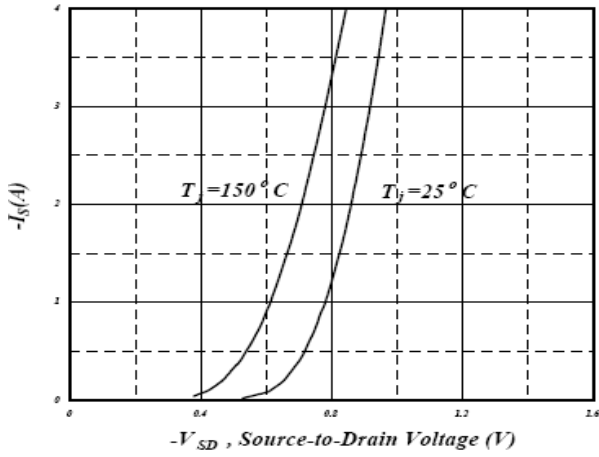


Fig 5. Forward Characteristic of Reverse Diode

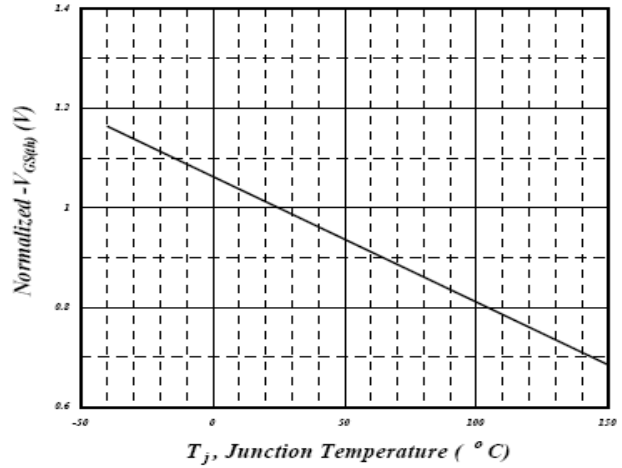


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

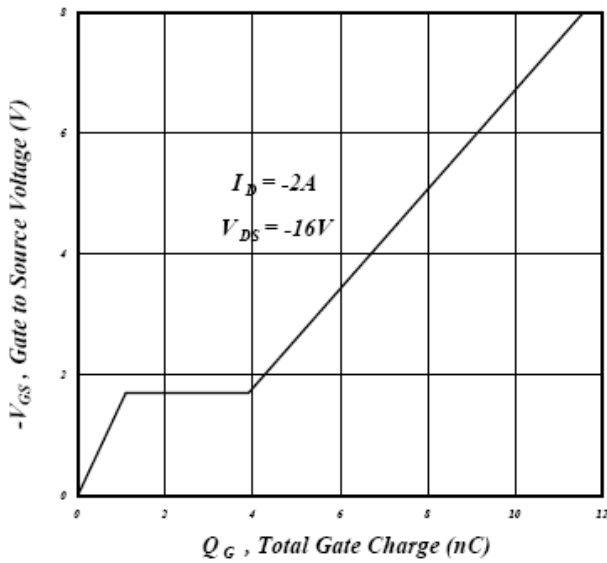


Fig 7. Gate Charge Characteristics

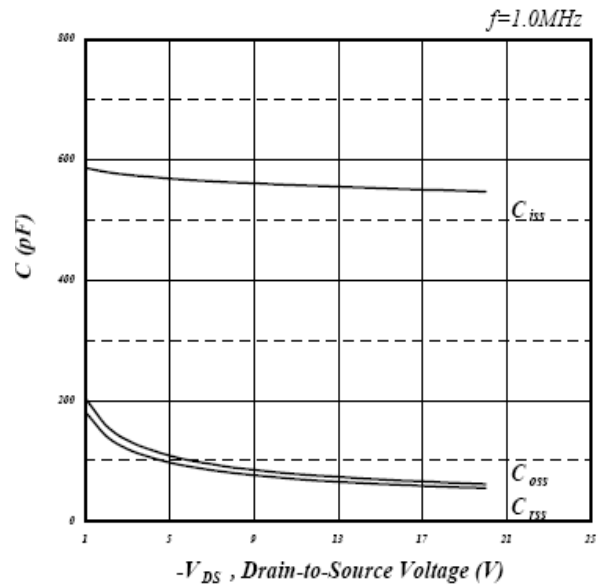


Fig 8. Typical Capacitance Characteristics



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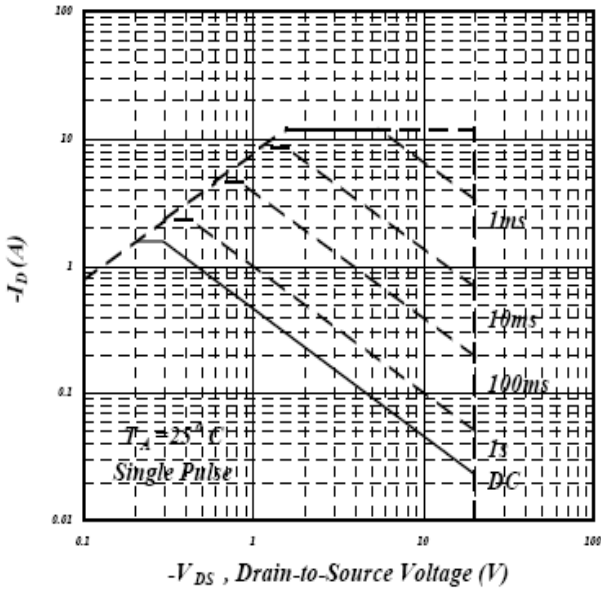


Fig 9. Maximum Safe Operating Area

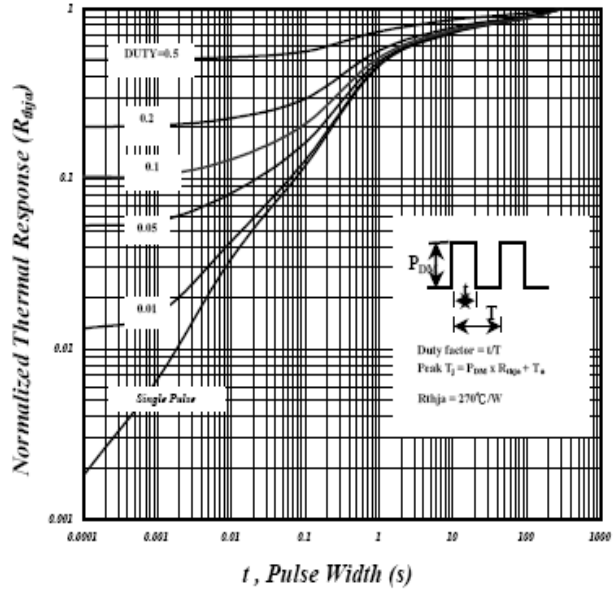


Fig 10. Effective Transient Thermal Impedance

TYPICAL CHARACTERISTICS (N-Channel)

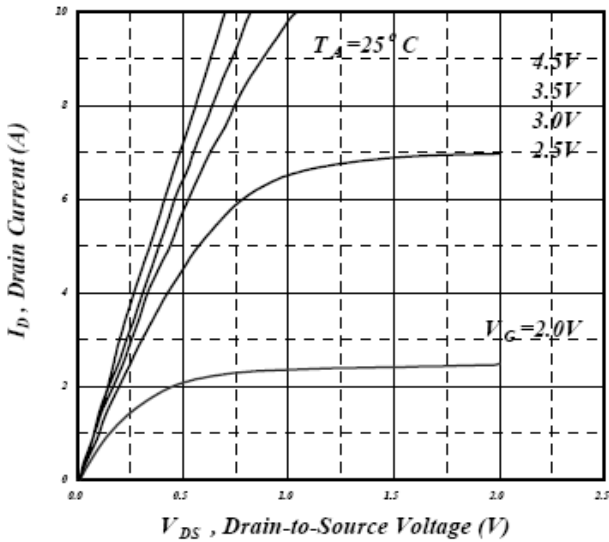


Fig 1. Typical Output Characteristics

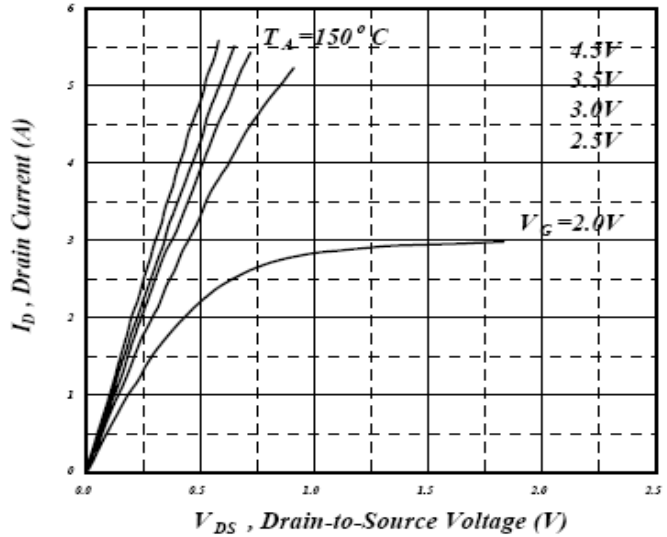


Fig 2. Typical Output Characteristics



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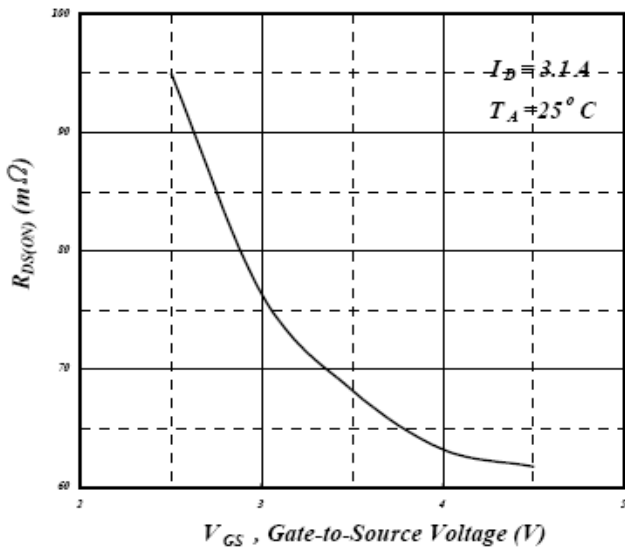


Fig 3. On-Resistance v.s. Gate Voltage

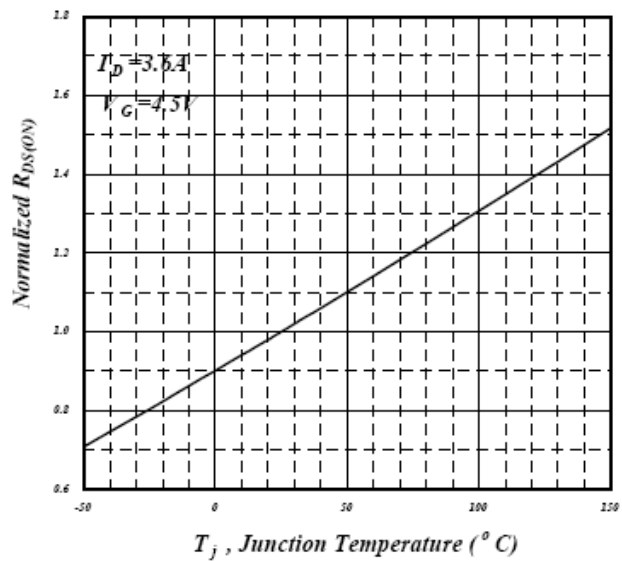


Fig 4. Normalized On-Resistance

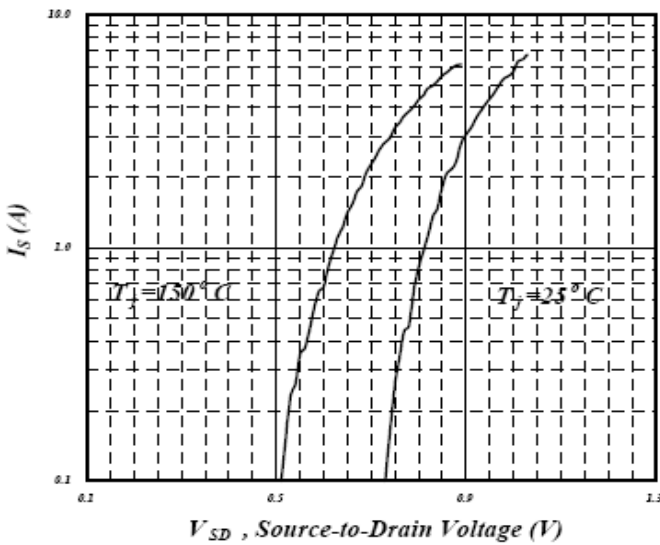


Fig 5. Forward Characteristic of Reverse Diode

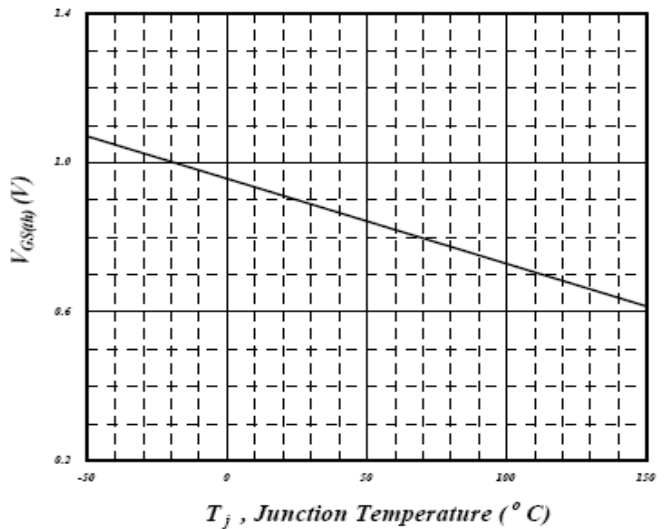


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



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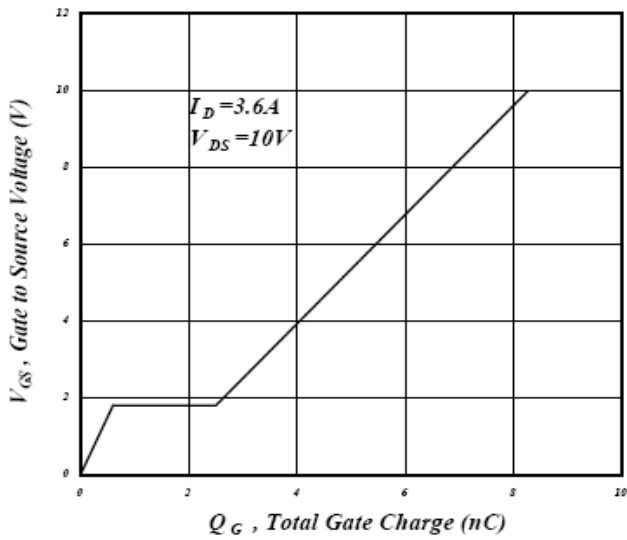


Fig 7. Gate Charge Characteristics

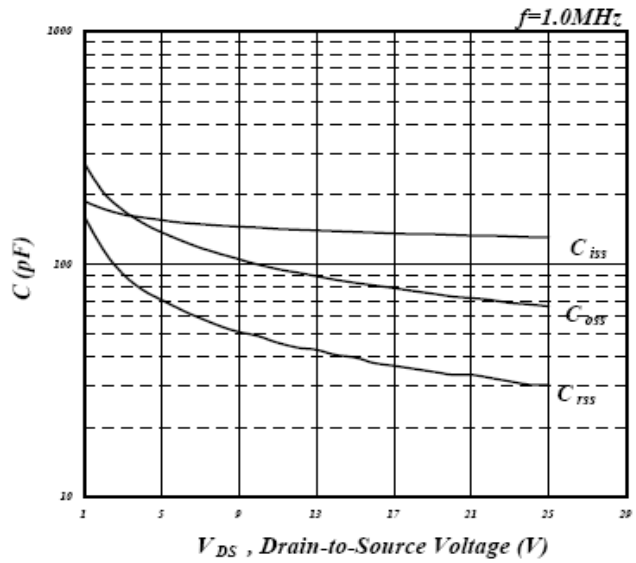


Fig 8. Typical Capacitance Characteristics

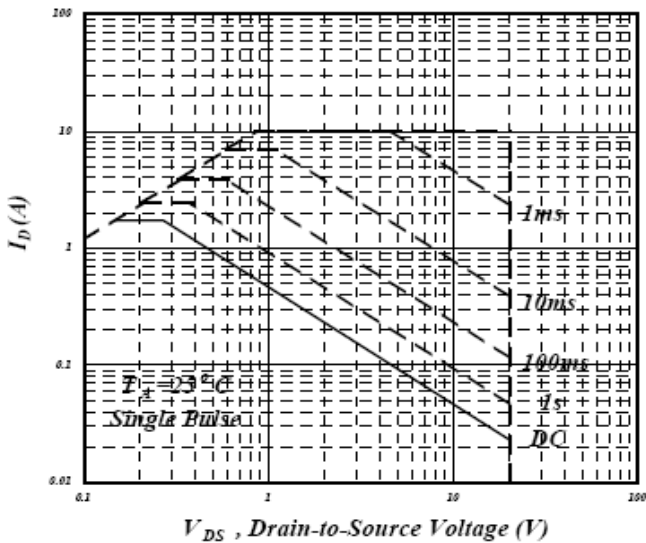


Fig 9. Maximum Safe Operating Area

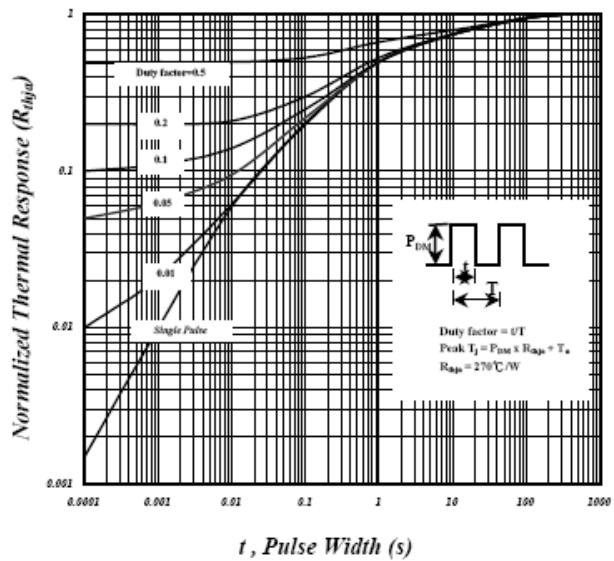
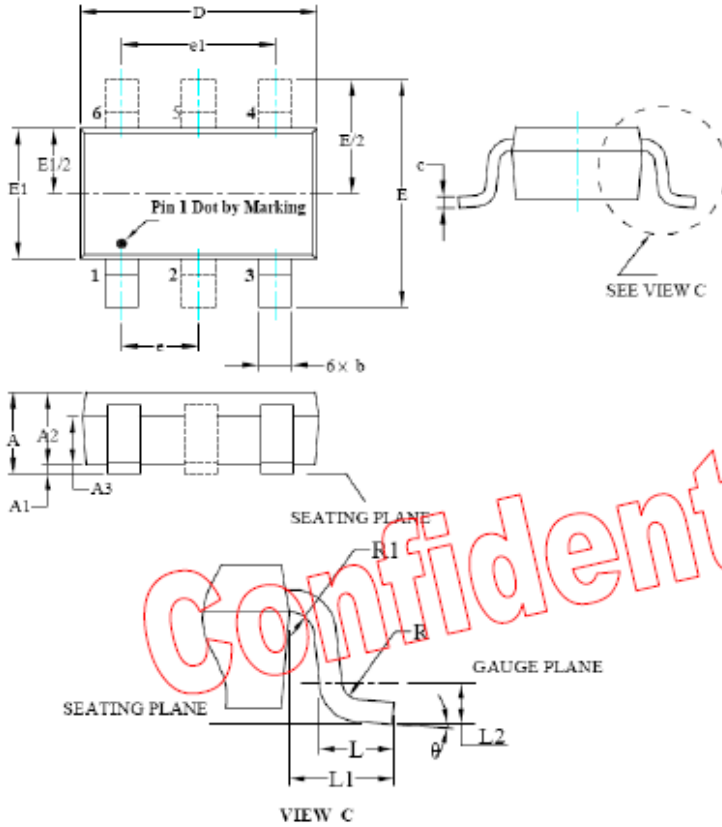


Fig 10. Effective Transient Thermal Impedance



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TSOT-23- 6P PACKAGE OUTLINE



SYMBOL	VARIATION					
	TSOT-23					
	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.700	0.860	1.000	0.028	0.034	0.040
A1	0.000	0.060	0.100	0.000	0.002	0.004
A2	0.700	0.800	0.900	0.028	0.031	0.035
A3	—	0.420	0.520	—	0.017	0.020
b	0.300	0.425	0.500	0.012	0.017	0.020
c	0.080	0.138	0.200	0.003	0.005	0.008
D	2.692	2.900	3.099	0.106	0.114	0.122
E	2.591	2.800	3.000	0.102	0.110	0.118
E1	1.397	1.600	1.803	0.055	0.063	0.071
e	0.950 BSC			0.037 BSC		
e1	1.900 BSC			0.075 BSC		
L	0.300	0.450	0.600	0.012	0.018	0.024
L1	0.600 REF			0.024 REF		
L2	0.250 BSC			0.010 BSC		
R	0.100	—	—	0.004	—	—
R1	0.100	—	0.250	0.004	—	0.010
θ	0°	—	6°	0°	—	6°



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