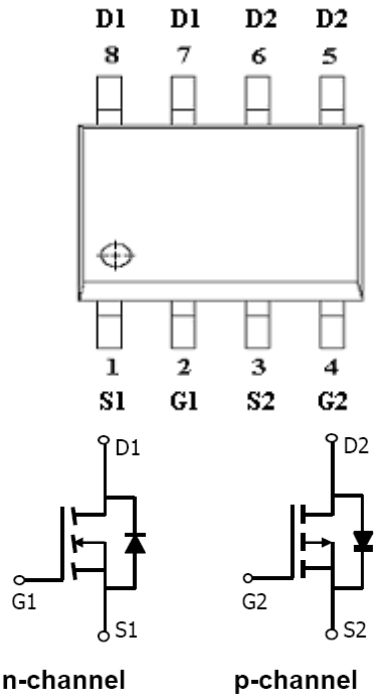
SPC4588
N & P Pair Enhancement Mode MOSFET

DESCRIPTION
The SPC4588 is the N- Channel and P-Channel enhancement mode power field effect transistor that is 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, motor driver and LCD inverter where low in-line power loss, and resistance to transients are needed.

APPLICATIONS
- Power Management in Note book
- Portable Equipment
- DC Fan
- Load Switch
- LCD Display inverter

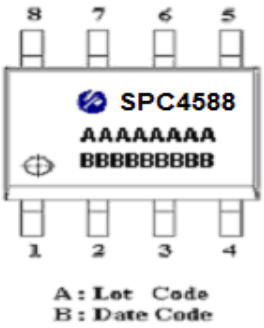
FEATURES
- N-Channel
  60V/8A,$R_{DS(ON)}$=38mΩ@V_{GS}=10V
  60V/6A,$R_{DS(ON)}$=44mΩ@V_{GS}=4.5V
- P-Channel
  -60V/-8A,$R_{DS(ON)}$=100mΩ@V_{GS}=-10V
  -60V/-6A,$R_{DS(ON)}$=135mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP–8 package design

PIN CONFIGURATION(SOP–8)



n-channel p-channel

PART MARKING



A : Lot Code
B : Date Code

SPC4588
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
SPC4588S8RGB	SOP-8	SPC4588

※ SPC4588S8RGB 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}	60	-60	V
Gate –Source Voltage		V_{GSS}	±20	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	8.0	-8.0	A
	T_A=70℃		6.0	-6.0	
Pulsed Drain Current		I_{DM}	12	-12	A
Continuous Source Current(Diode Conduction)		I_S	2.3	-2.3	A
Power Dissipation	T_A=25℃	P_D	2	2	W
	T_A=70℃		1.6	1.4	
Operating Junction Temperature		T_J	-55/150		℃
Storage Temperature Range		T_{STG}	-55/150		℃
Thermal Resistance-Junction to Ambient	$T \leq 10$sec	$R_{\theta JA}$	50	52	℃/W
	Steady State		80	80	

ELECTRICAL CHARACTERISTICS (NMOS)

(T_A=25℃ Unless otherwise noted)

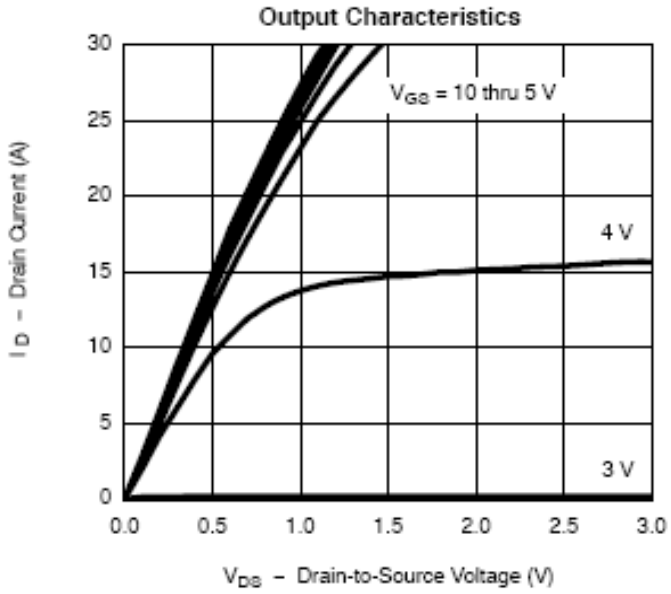
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	0.8		2.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V			25	uA
		V_{DS}=60V,V_{GS}=0V T_J=80℃			250	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=8A		0.034	0.038	Ω
		V_{GS}=4.5V, I_D=6A		0.038	0.044	Ω
Diode Forward Voltage	V_{SD}	I_S=2.5A,V_{GS}=0V			1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=30V,V_{GS}=10V I_D= 5.3A		10	15	nC
Gate-Source Charge	Q_{gs}			3.5		
Gate-Drain Charge	Q_{gd}			3.6		
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V f=1MHz		890		pF
Output Capacitance	C_{oss}			85		
Reverse Transfer Capacitance	C_{rss}			48		
Turn-On Time	$t_{d(on)}$	V_{DD}=30V,R_D=6.8Ω I_D=4.4A,V_G=10V R_G=1Ω		10	15	nS
	t_r			12	20	
Turn-Off Time	$t_{d(off)}$			25	35	
	t_f			10	15	

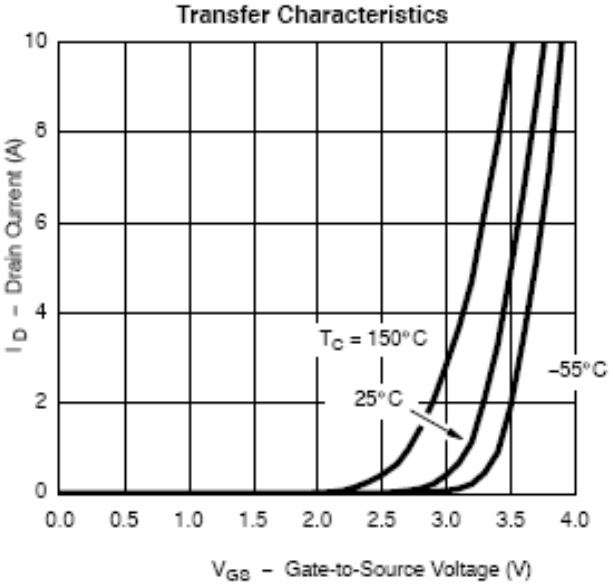
ELECTRICAL CHARACTERISTICS (PMOS)

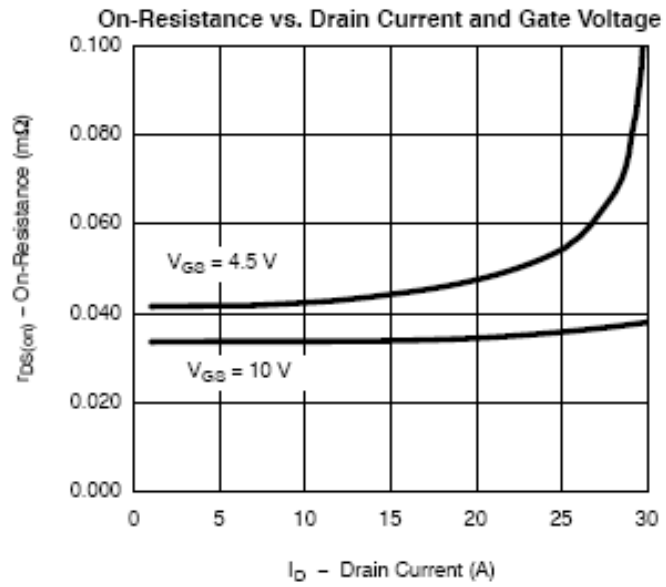
(T_A=25℃ Unless otherwise noted)

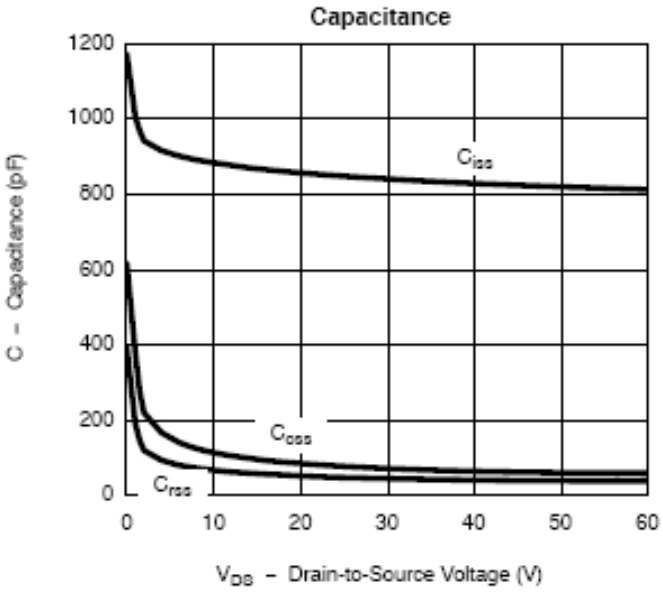
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250uA	-60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-0.8		-2.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-10V,V_{GS}=0V			-1	uA
		V_{DS}=-60V,V_{GS}=0V T_J=85℃			-25	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V,I_D=-8A			0.100	Ω
		V_{GS}=-4.5V,I_D=-6A			0.135	
Diode Forward Voltage	V_{SD}	I_S=-2.5A,V_{GS}=0V			-1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-30V,V_{GS}=10V I_D=-5.3A		16	25	nC
Gate-Source Charge	Q_{gs}			4.4		
Gate-Drain Charge	Q_{gd}			8.7		
Input Capacitance	C_{iss}	V_{DS}=-30V,V_{GS}=0V f=1MHz		1590	2550	pF
Output Capacitance	C_{oss}			110		
Reverse Transfer Capacitance	C_{rss}			70		
Turn-On Time	$t_{d(on)}$	V_{DD}=-30V,R_D=6.8Ω I_D=-4.4A,V_G=-10V R_G=1Ω		9		nS
	t_r			14		
Turn-Off Time	$t_{d(off)}$			45		
	t_f			40		

TYPICAL CHARACTERISTICS (NMOS)









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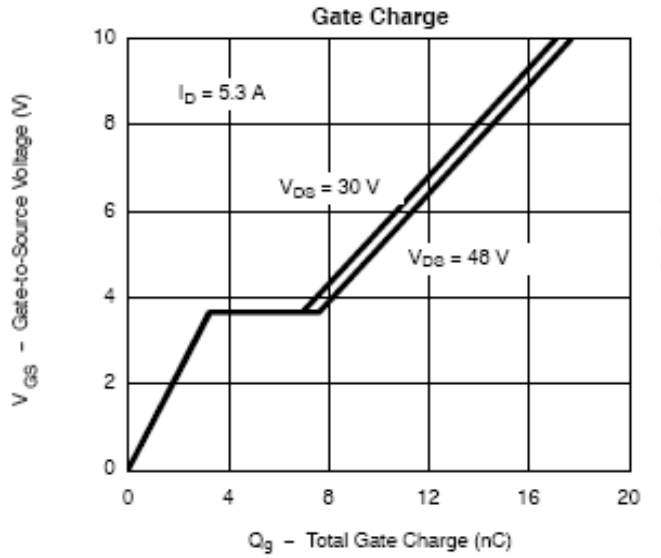
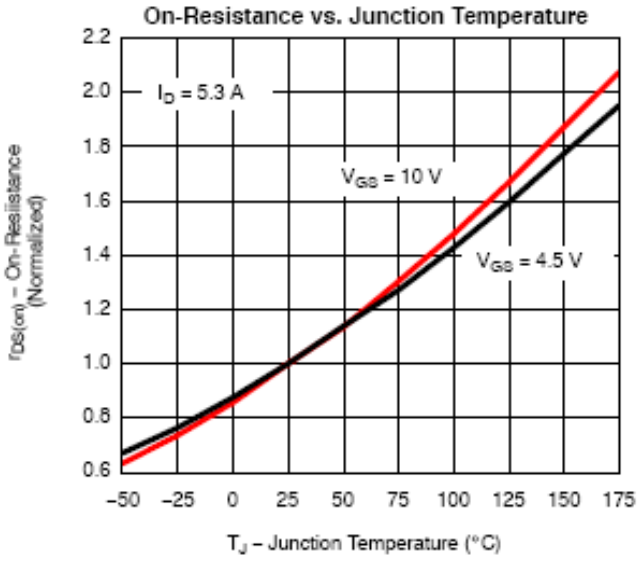
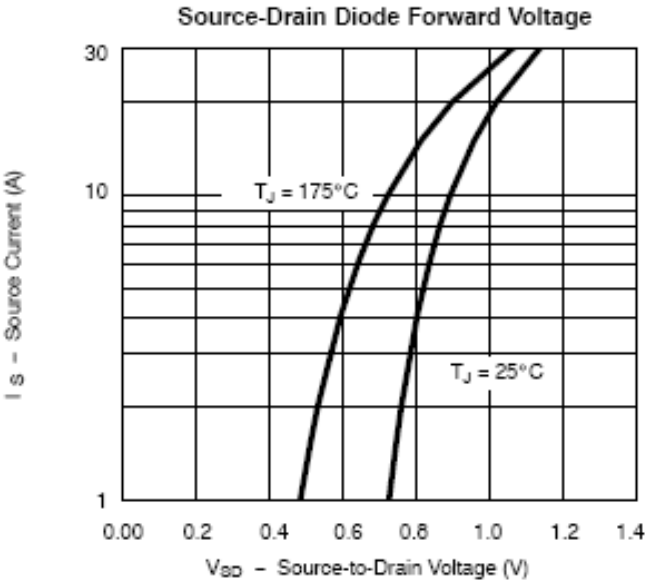
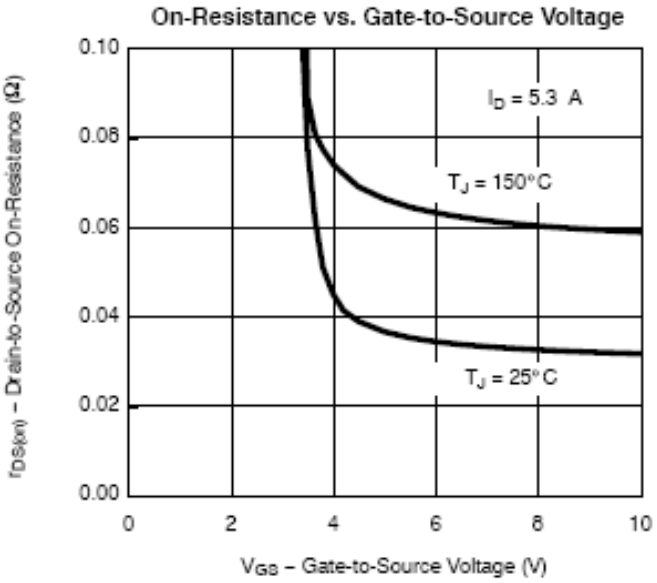


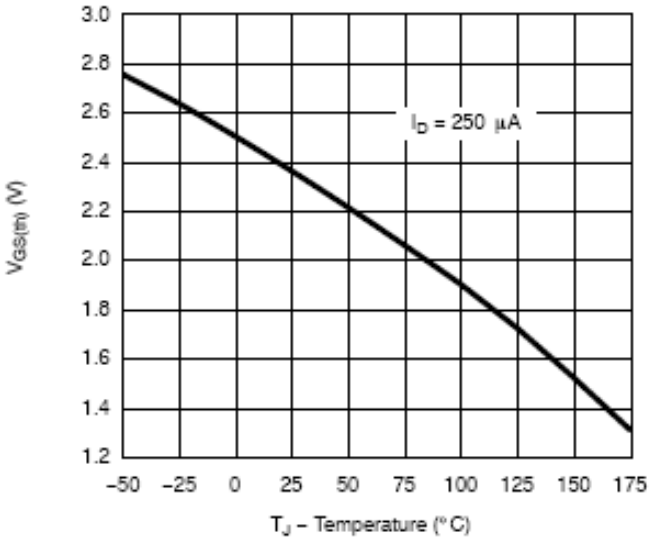




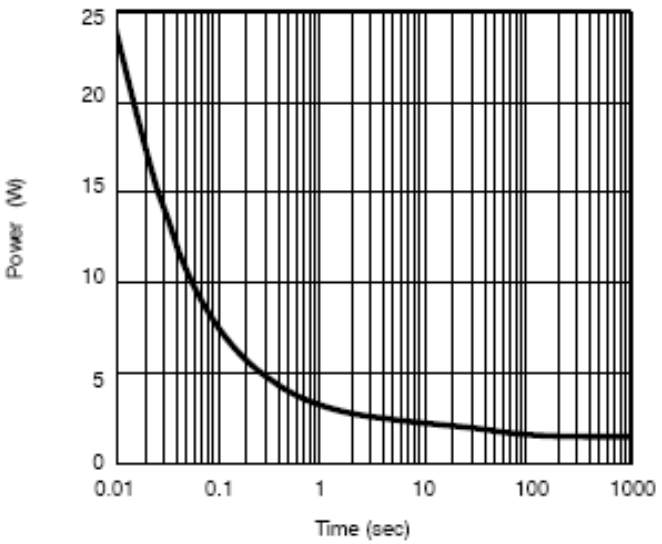


TYPICAL CHARACTERISTICS (NMOS)

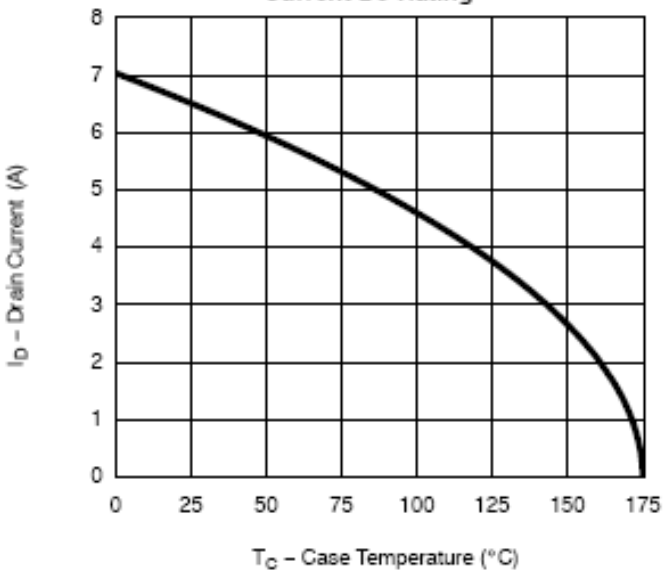
Threshold Voltage



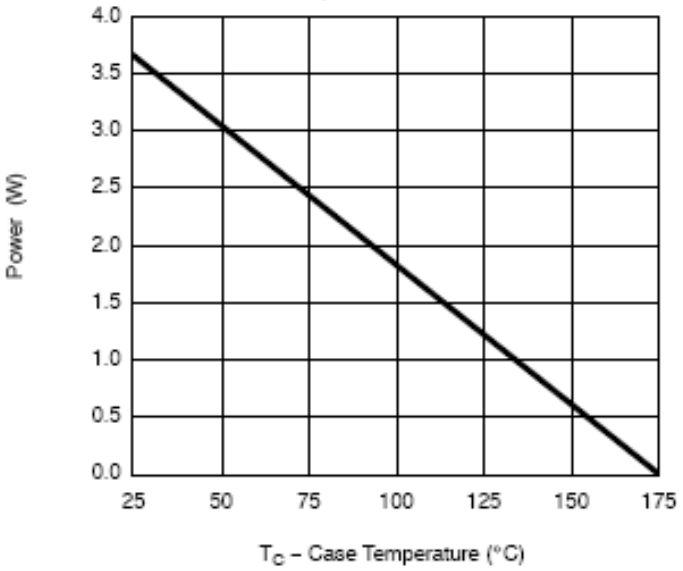
Single Pulse Power, Junction-to-Ambient



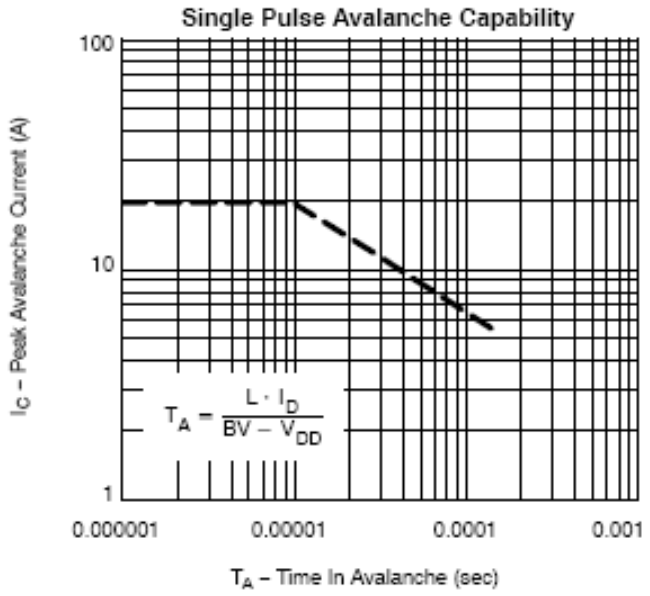
Current De-Rating*

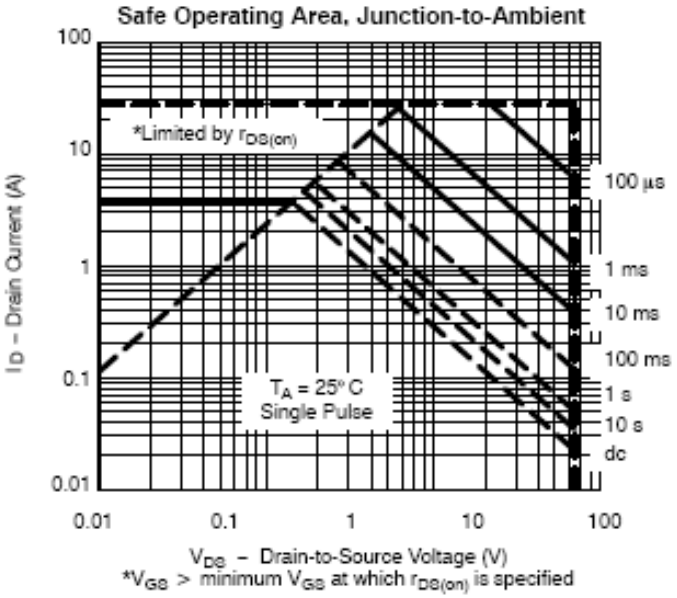


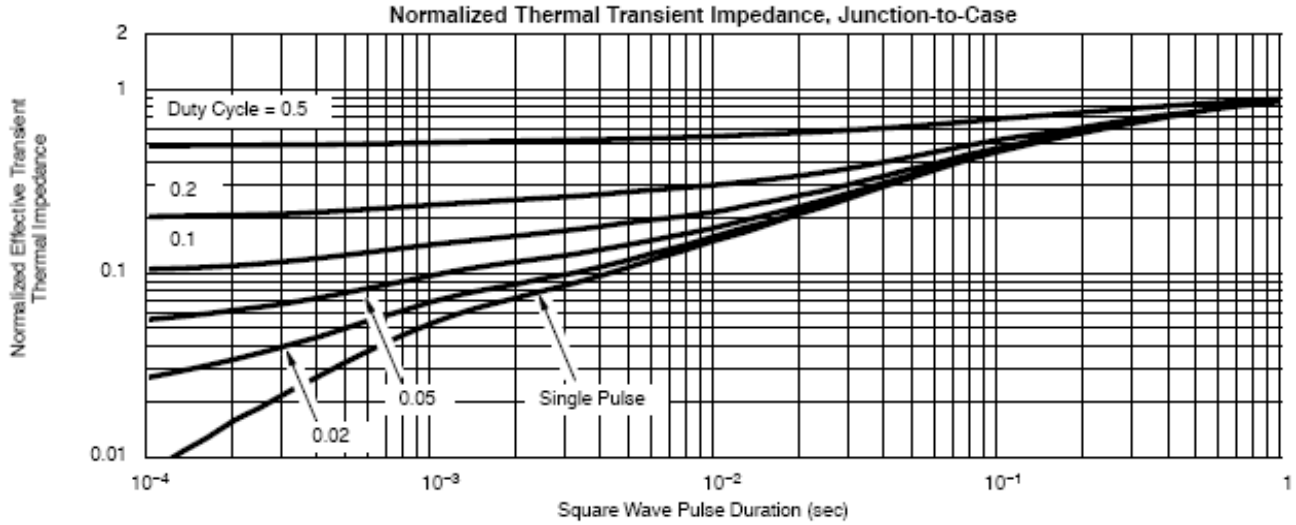
Power, Junction-to-Case



TYPICAL CHARACTERISTICS (NMOS)

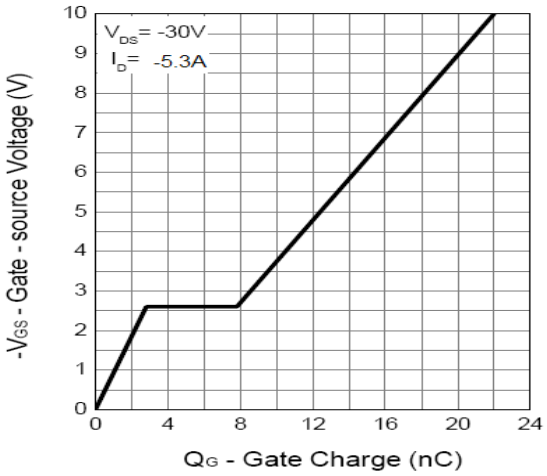




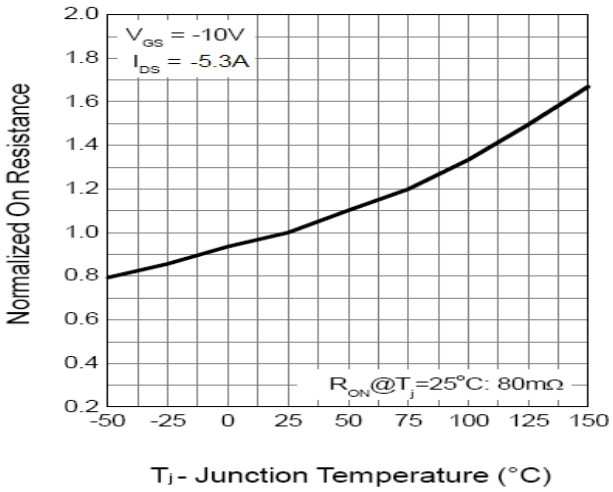


TYPICAL CHARACTERISTICS (PMOS)

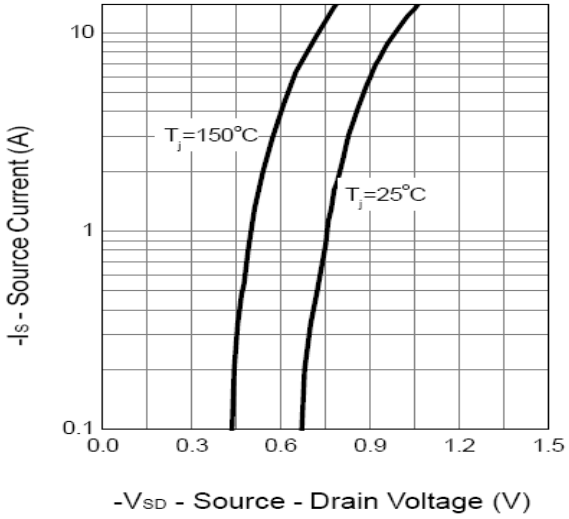
Gate Charge



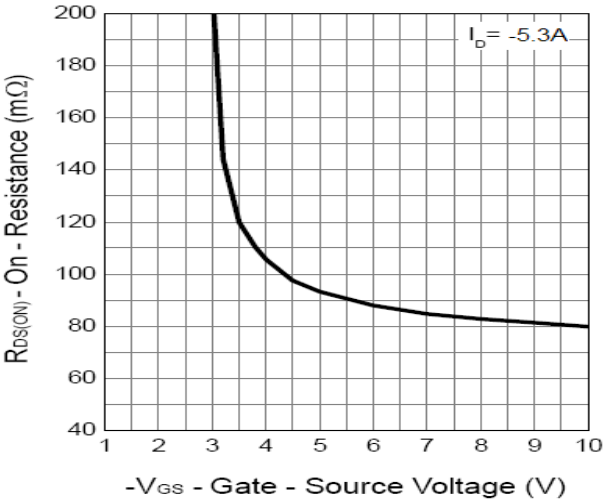
Drain-Source On Resistance



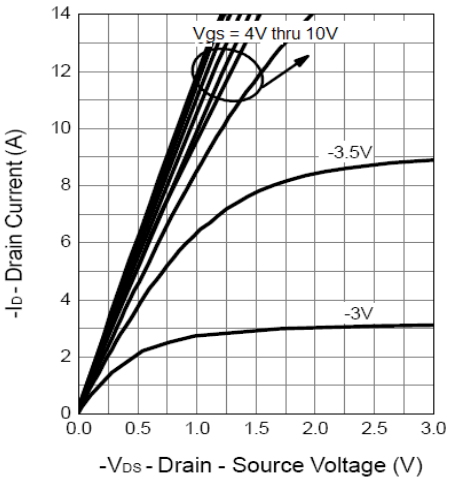
Source-Drain Diode Forward



Drain-Source On Resistance



Output Characteristics



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