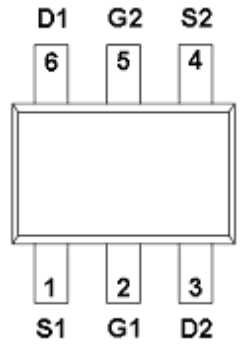
SPC6333
N & P Pair Enhancement Mode MOSFET

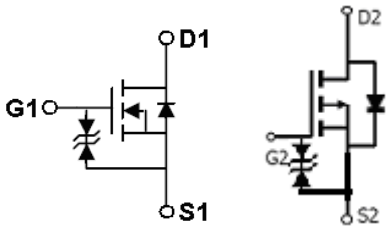
DESCRIPTION
The SPC6333 is the N- and P-Channel enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance. These devices are 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.

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

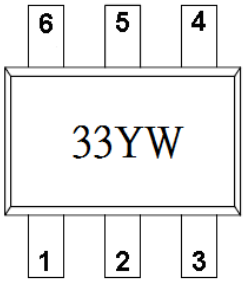
FEATURES
- N-Channel
  20V/0.95A,$R_{DS(ON)}$=380mΩ@V_{GS}=4.5V
  20V/0.75A,$R_{DS(ON)}$=450mΩ@V_{GS}=2.5V
  20V/0.65A,$R_{DS(ON)}$=800mΩ@V_{GS}=1.8V
- P-Channel
  -20V/0.45A,$R_{DS(ON)}$=520mΩ@V_{GS}=-4.5V
  -20V/0.35A,$R_{DS(ON)}$=700mΩ@V_{GS}=-2.5V
  -20V/0.25A,$R_{DS(ON)}$=1500mΩ@V_{GS}=-1.8V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-363 (SC-70-6L) package design

PIN CONFIGURATION(SOT-363 / SC-70-6L)





PART MARKING



Y : Year Code
W: Week Code

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PIN DESCRIPTION

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

ORDERING INFORMATION

Part Number	Package	Part Marking
SPC6333S36RGB	SOT-363	33YW

※ Week Code : A ~ Z(1 ~ 26) ; a ~ z(27 ~ 52)
※ SPC6333S36RGB : 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}	20	-20	V
Gate –Source Voltage		V_{GSS}	±12	±12	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	1.2	-1.0	A
	T_A=80℃		0.9	-0.7	
Pulsed Drain Current		I_{DM}	4	-3	A
Continuous Source Current(Diode Conduction)		I_S	0.6	-0.6	A
Power Dissipation	T_A=25℃	P_D	0.3		W
	T_A=70℃		0.19		
Operating Junction Temperature		T_J	-55/150		℃
Storage Temperature Range		T_{STG}	-55/150		℃
Thermal Resistance-Junction to Ambient	T ≤ 10sec	$R_{\theta JA}$	360	360	℃/W
	Steady State		400	400	

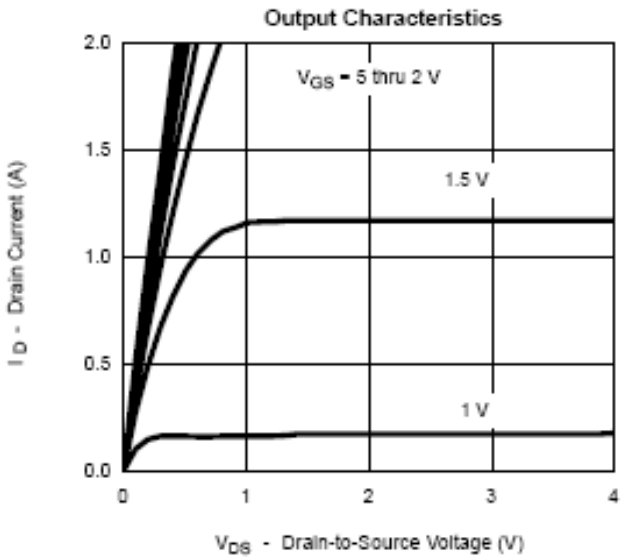
SPC6333
N & P Pair Enhancement Mode MOSFET

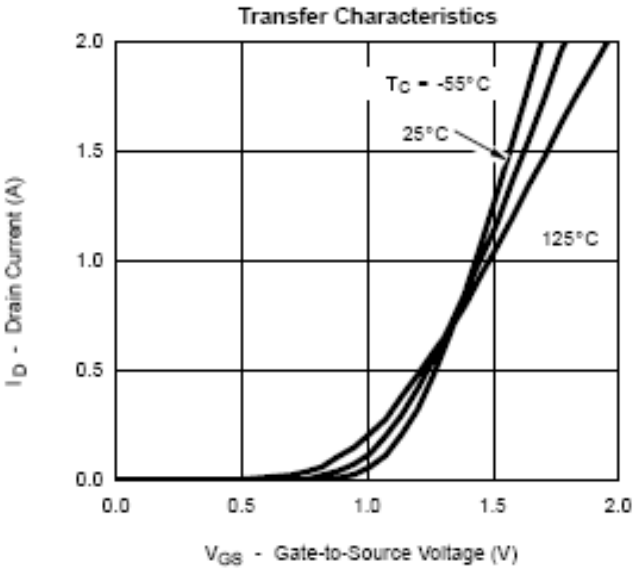
ELECTRICAL CHARACTERISTICS

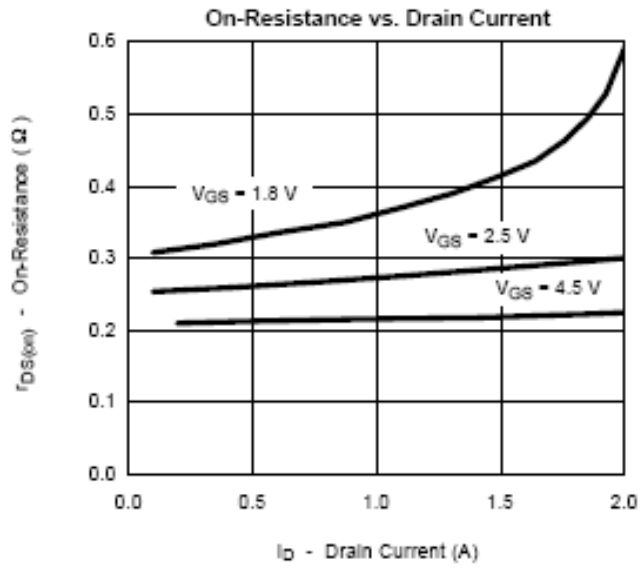
(T_A=25℃ Unless otherwise noted)

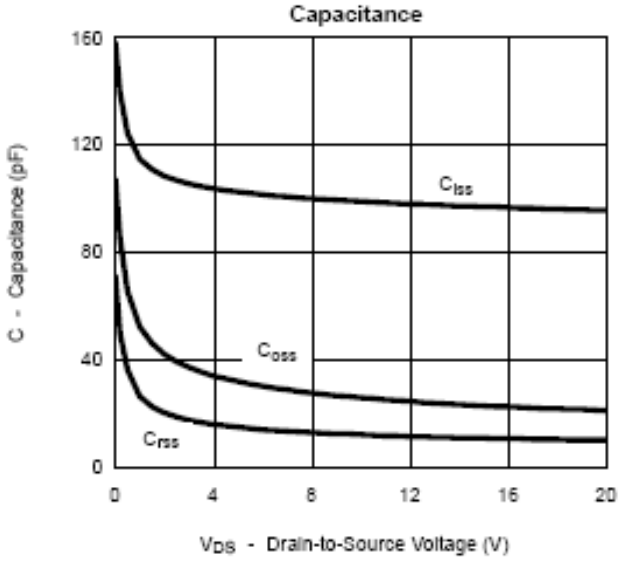
Parameter	Symbol	Conditions		Min.	Typ	Max.	Unit
Static							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D= 250uA	N-Ch	20			V
		V_{GS}=0V,I_D=-250uA	P-Ch	-20			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	N-Ch	0.35		1.0	
		V_{DS}=V_{GS},I_D=-250uA	P-Ch	-0.35		-1.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V	N-Ch			30	uA
		V_{DS}=0V,V_{GS}=±12V	P-Ch			-30	
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℃	N-Ch			5	
		V_{DS}=-20V,V_{GS}=0V T_J=55℃	P-Ch			-5	
On-State Drain Current	$I_{D(on)}$	V_{DS}≥ 4.5V,V_{GS} =5V	N-Ch	2			A
		V_{DS}≤ -4.5V,V_{GS} =-5V	P-Ch	-2			
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=4.5V,I_D=0.95A	N-Ch		0.26	0.38	Ω
		V_{GS}=-4.5V,I_D=-0.45A	P-Ch		0.42	0.52	
		V_{GS}=2.5V,I_D=0.75A	N-Ch		0.32	0.45	
		V_{GS}=-2.5V,I_D=-0.35A	P-Ch		0.58	0.70	
		V_{GS}=1.8V,I_D=0.65A	N-Ch		0.42	0.80	
		V_{GS}=-1.8V,I_D=-0.25A	P-Ch		0.95	1.5	
Forward Transconductance	gfs	V_{DS}=10V,I_D=1.2A	N-Ch		2.6		S
		V_{DS}=-10V,I_D=-1.0A	P-Ch		1.5		
Diode Forward Voltage	V_{SD}	I_S=0.5A,V_{GS}=0V	N-Ch		0.8	1.2	V
		I_S=-0.5A,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≡1.2A P-Channel V_{DS}=-10V,V_{GS}=-4.5V ,I_D≡-1.0A	N-Ch		1.2	2.0	nC
			P-Ch		1.1	1.8	
Gate-Source Charge	Q_{gs}		N-Ch		0.2		
			P-Ch		0.3		
Gate-Drain Charge	Q_{gd}		N-Ch		0.3		
			P-Ch		0.2		
Turn-On Time	$t_{d(on)}$	N-Channel V_{DD}=10V,R_L=20Ω ,I_D≡0.5A V_{GEN}=4.5V ,R_G=6Ω P-Channel V_{DD}=-10V,R_L=20Ω ,I_D≡-0.5A V_{GEN}=-4.5V ,R_G=6Ω	N-Ch		15	25	nS
			P-Ch		18	30	
	t_r		N-Ch		20	30	
			P-Ch		25	40	
Turn-Off Time	$t_{d(off)}$		N-Ch		25	40	
			P-Ch		20	30	
	t_f		N-Ch		12	20	
			P-Ch		12	20	

TYPICAL CHARACTERISTICS (N-Channel)

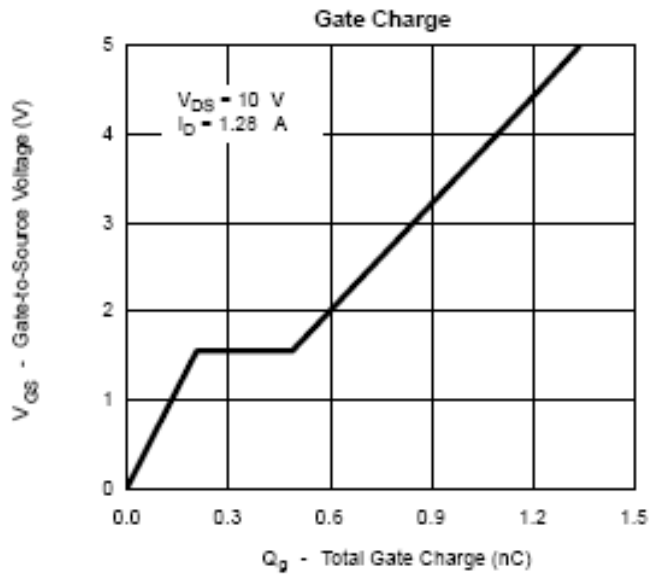


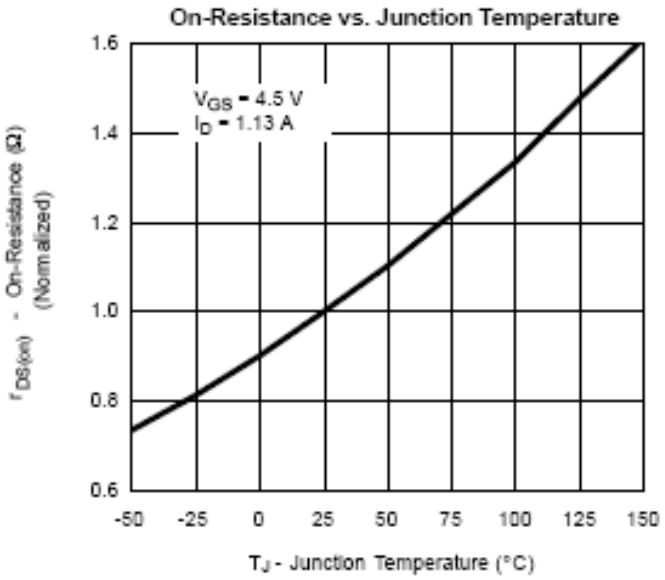


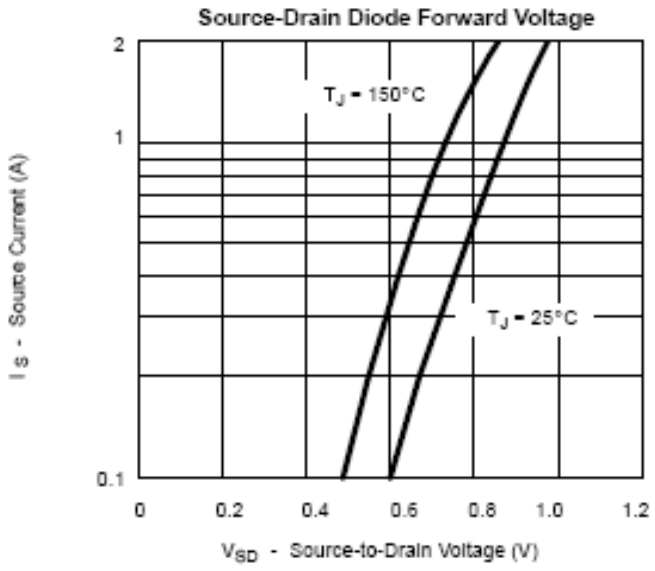


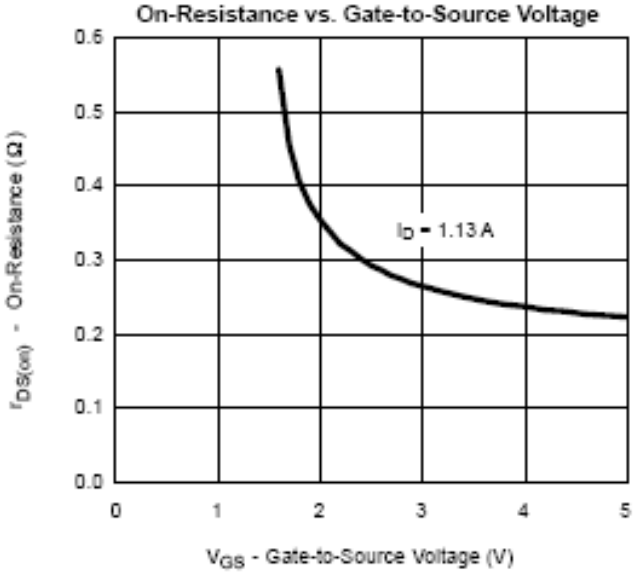


TYPICAL CHARACTERISTICS (N-Channel)

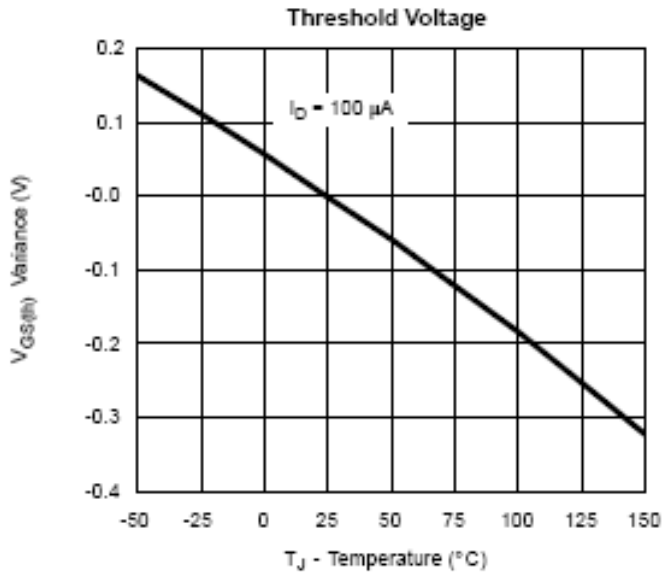


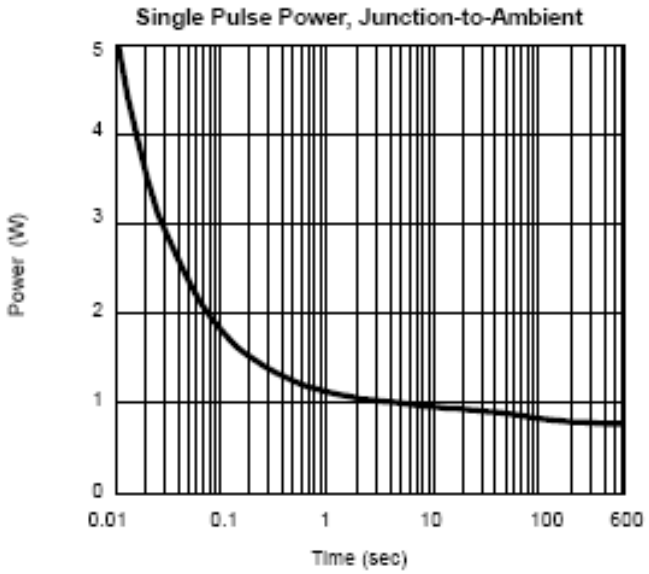


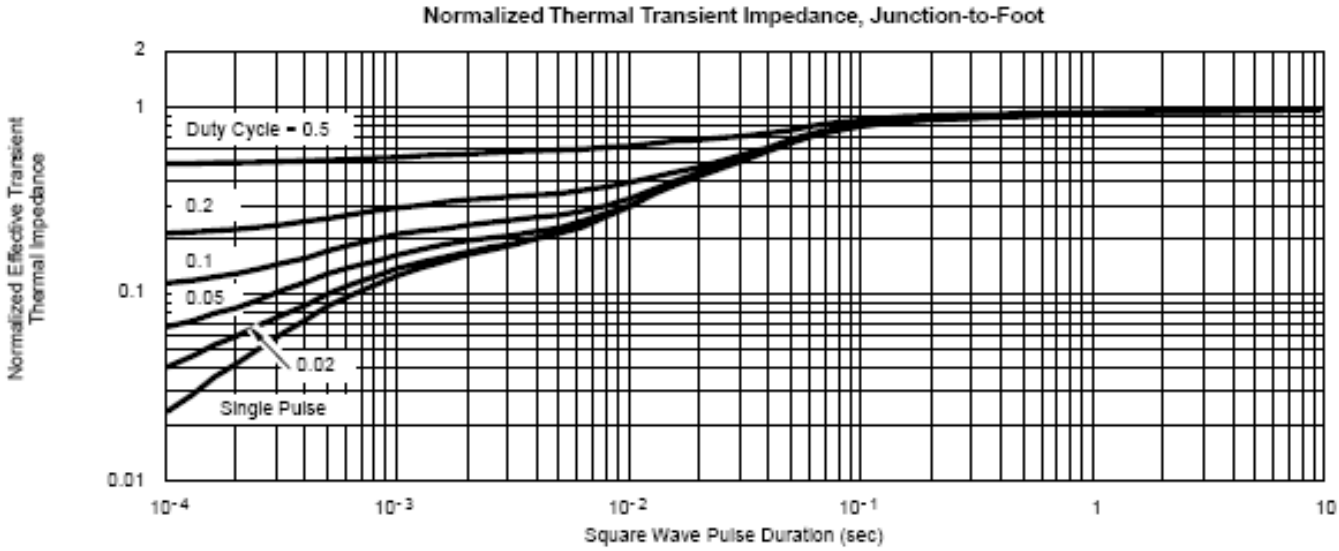




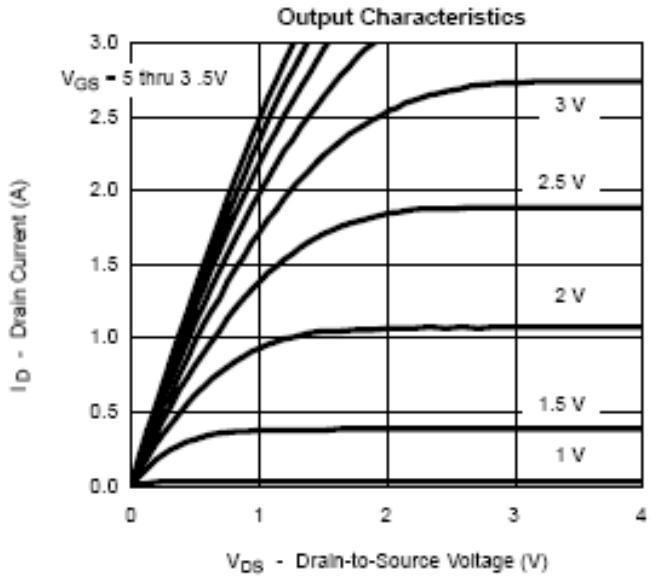
TYPICAL CHARACTERISTICS (N-Channel)

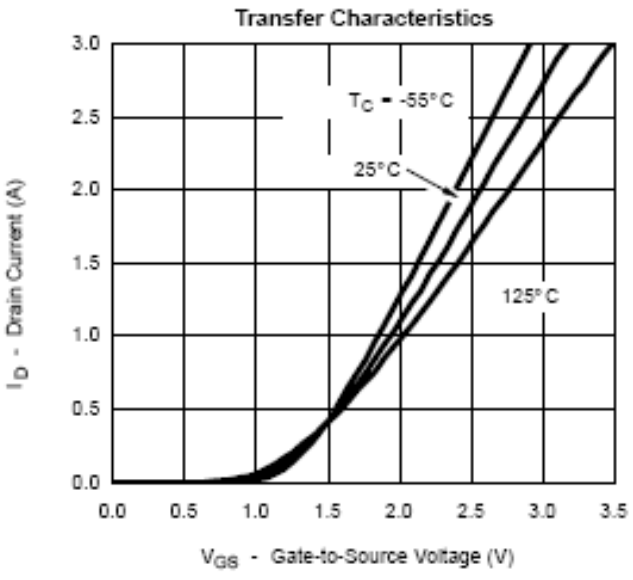


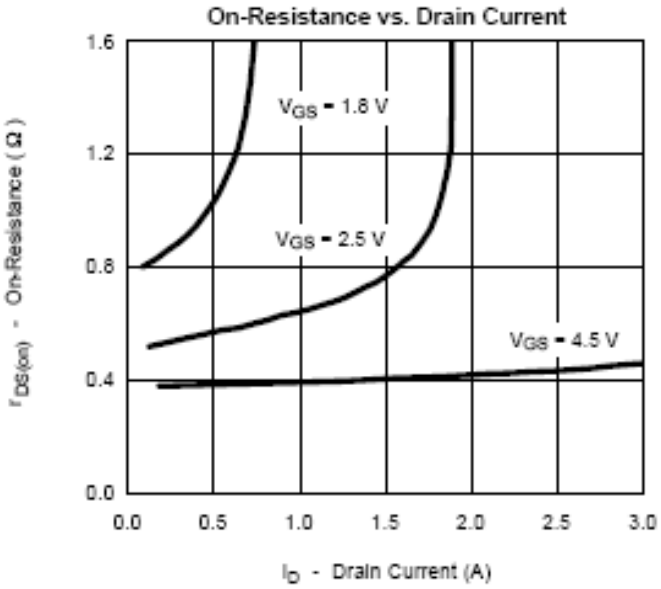


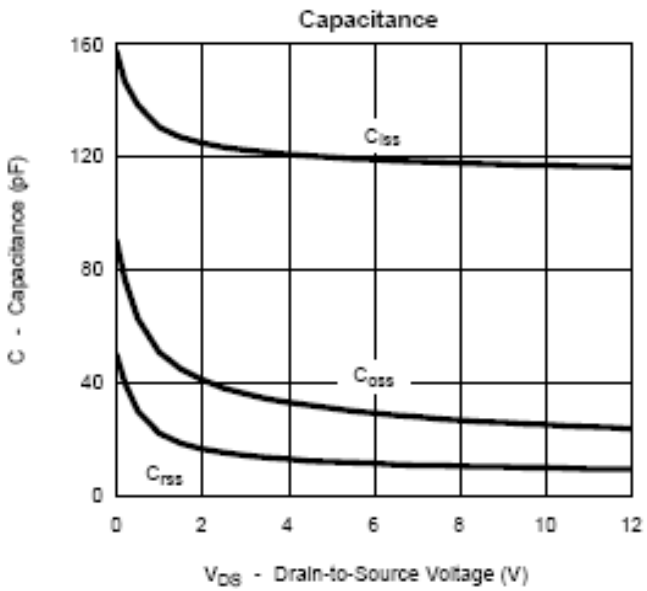


TYPICAL CHARACTERISTICS (P-Channel)



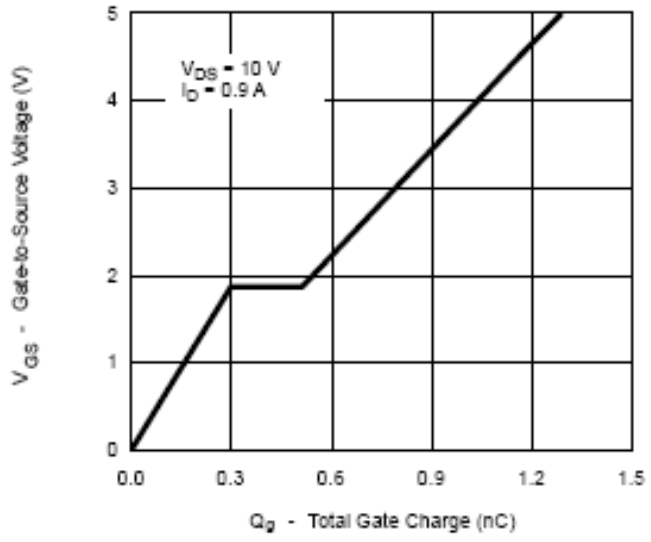




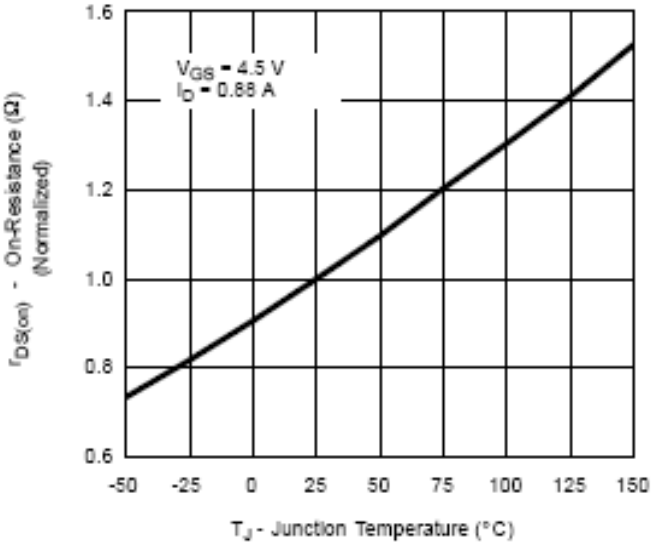


TYPICAL CHARACTERISTICS (P-Channel)

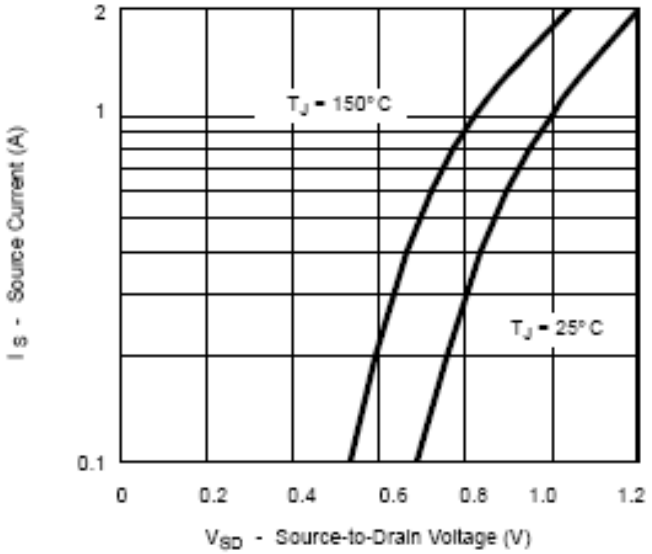
Gate Charge



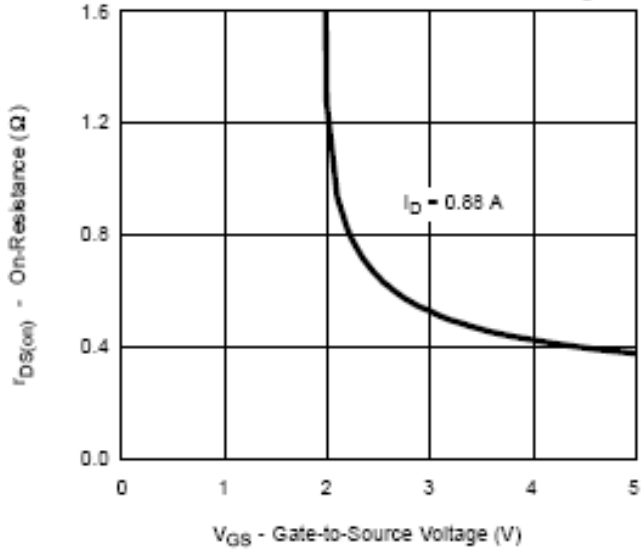
On-Resistance vs. Junction Temperature



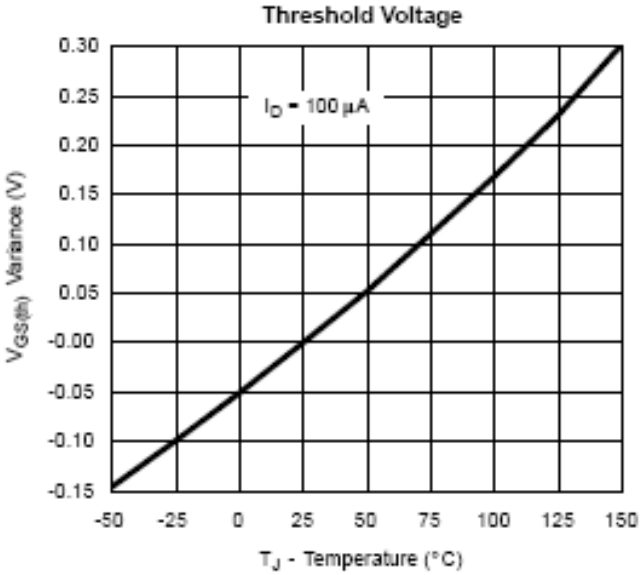
Source-Drain Diode Forward Voltage

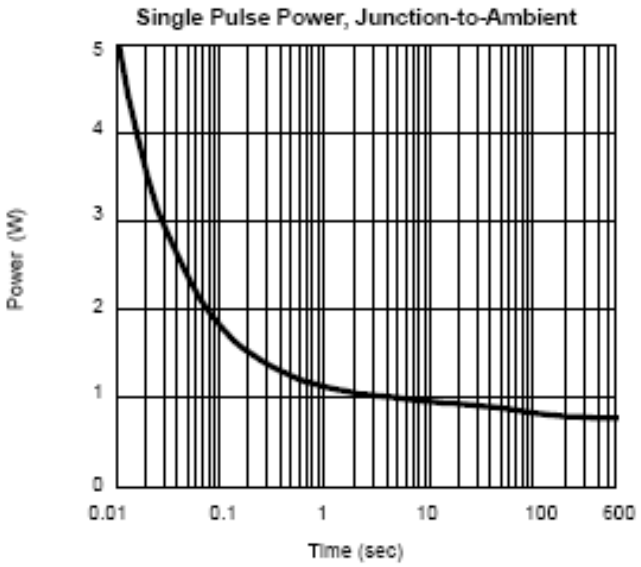


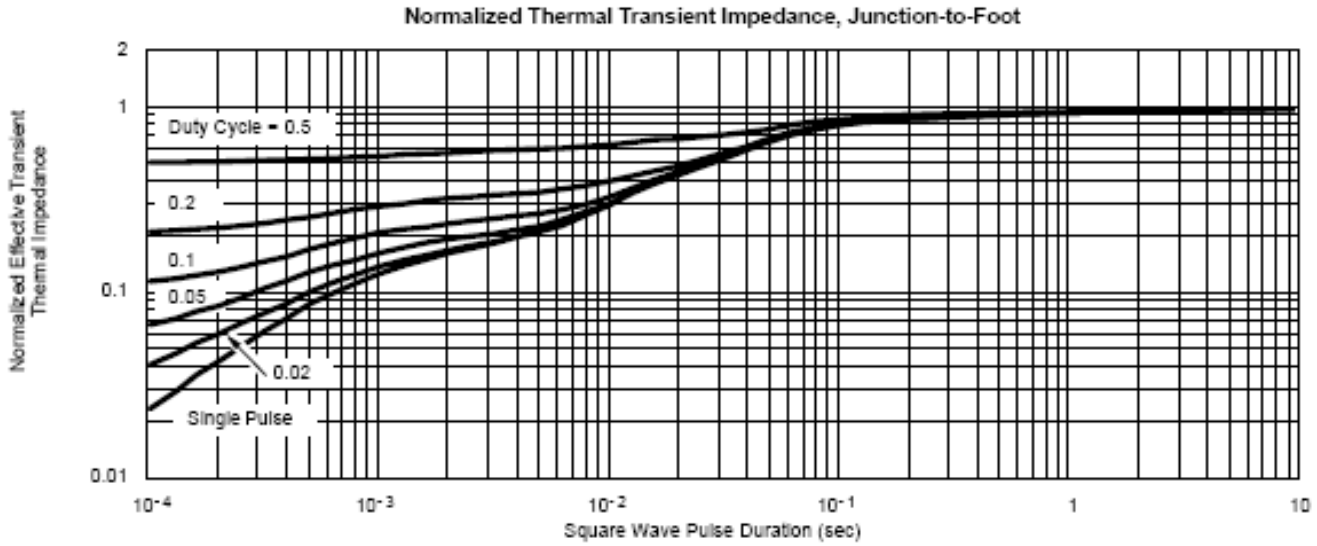
On-Resistance vs. Gate-to-Source Voltage



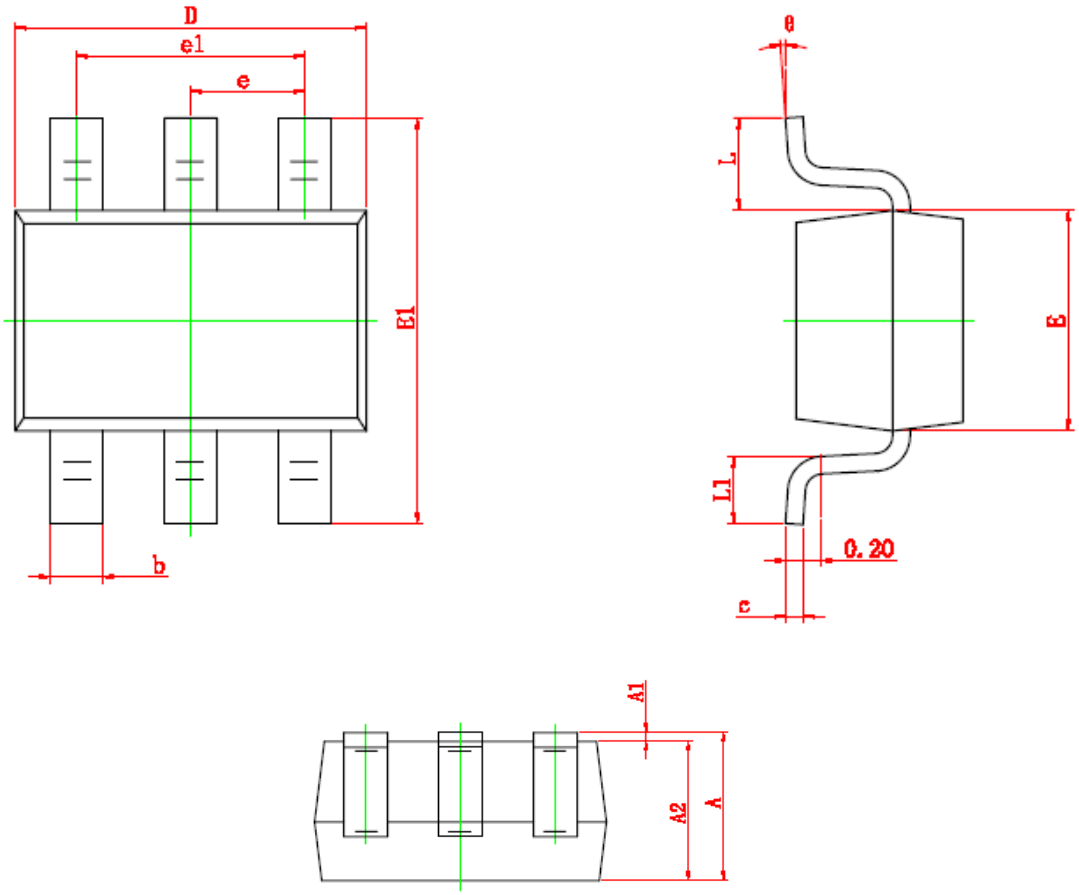
TYPICAL CHARACTERISTICS (P-Channel)







SOT-363 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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