

RoHS Compliant Product  
 A suffix of "-C" specifies halogen & lead-free

## DESCRIPTION

The SST6601-C is the highest performance trench N-Ch and P-Ch MOSFETs with extreme high cell density, which provide excellent  $R_{DS(ON)}$  and gate charge for most of the synchronous buck converter applications.

The SST6601-C meet the RoHS and Green Product requirement with full function reliability approved.

## FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

## MARKING



## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-26	3K	7 inch

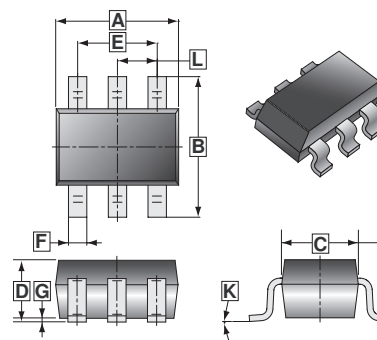
## ORDER INFORMATION

Part Number	Type
SST6601-C	Lead (Pb)-free and Halogen-free

## ABSOLUTE MAXIMUM RATINGS

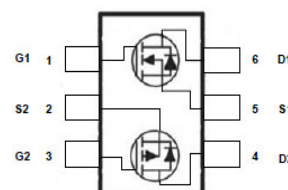
Parameter	Symbol	Ratings		Unit	
		N-Channel	P-Channel		
Drain-Source Voltage	$V_{DS}$	30	-30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$	$\pm 12$	V	
Continuous Drain Current <sup>1</sup> , @ $V_{GS}=10V$	$I_D$	$T_A=25^\circ C$	3.7	-2.7	A
		$T_A=70^\circ C$	3	-2.2	
Pulsed Drain Current <sup>3</sup>	$I_{DM}$	15	-10	A	
Total Power Dissipation	$P_D$	$T_A=25^\circ C$		1.14	W
Operating Junction & Storage Temperature Range	$T_J, T_{STG}$			-55~150	$^\circ C$
Thermal Data					
Thermal Resistance Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	$t \leq 5sec, 110$		$^\circ C/W$	
		Steady State, 156			
Thermal Resistance, Junction-Ambient <sup>2</sup>		180			
Thermal Resistance, Junction-Case <sup>1</sup>	$R_{\theta JC}$	70			

## SOT-26



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.10
B	2.60	3.00	H	0	0.60 REF.
C	1.40	1.80	J	0	0.12 REF.
D	1.30 MAX.		K	0 $^\circ$	10 $^\circ$
E	1.90 REF.		L	0	0.95 REF.
F	0.25	0.50			

## TOP VIEW



**N-Channel ELECTRICAL CHARACTERISTICS** (T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =250μA	
Gate Threshold Voltage	V <sub>GS(th)</sub>	0.5	-	1.5	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	
Forward Transconductance	g <sub>fs</sub>	-	4.3	-	S	V <sub>DS</sub> =5V, I <sub>D</sub> =3A	
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±12V	
Drain-Source Leakage Current	I <sub>DSS</sub>	T <sub>J</sub> =25°C	-	-	1	μA	V <sub>DS</sub> =24V, V <sub>GS</sub> =0
		T <sub>J</sub> =70°C	-	-	25		V <sub>DS</sub> =24V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance <sup>4</sup>	R <sub>DS(ON)</sub>	-	-	55	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> =3.4A	
		-	-	70		V <sub>GS</sub> =4.5V, I <sub>D</sub> =2.8A	
		-	-	95		V <sub>GS</sub> =2.5V, I <sub>D</sub> =1A	
Total Gate Charge	Q <sub>g</sub>	-	9.4	-	nC	I <sub>D</sub> =3.4A V <sub>DS</sub> =15V V <sub>GS</sub> =10V	
Gate-Source Charge	Q <sub>gs</sub>	-	1.6	-			
Gate-Drain Charge	Q <sub>gd</sub>	-	0.8	-			
Turn-on Delay Time	T <sub>d(on)</sub>	-	3.6	-	nS	V <sub>DS</sub> =15V I <sub>D</sub> =3.4A V <sub>GS</sub> =10V R <sub>G</sub> =6Ω	
Rise Time	T <sub>r</sub>	-	16.6	-			
Turn-off Delay Time	T <sub>d(off)</sub>	-	24.4	-			
Fall Time	T <sub>f</sub>	-	4.2	-			
Input Capacitance	C <sub>iss</sub>	-	315	-	pF	V <sub>GS</sub> =0 V <sub>DS</sub> =15V f=1MHz	
Output Capacitance	C <sub>oss</sub>	-	46	-			
Reverse Transfer Capacitance	C <sub>rss</sub>	-	33	-			
<b>Source-Drain Diode</b>							
Forward on Voltage <sup>4</sup>	V <sub>SD</sub>	-	-	1	V	I <sub>S</sub> =1A, V <sub>GS</sub> =0	
Reverse Recovery Time	t <sub>rr</sub>	-	7.7	-	nS	I <sub>F</sub> =1A, V <sub>GS</sub> =0	
Reverse Recovery Charge	Q <sub>rr</sub>	-	3.3	-	nC	di/dt=100A/μs	

**P-Channel ELECTRICAL CHARACTERISTICS** (T<sub>J</sub>=25°C unless otherwise specified)

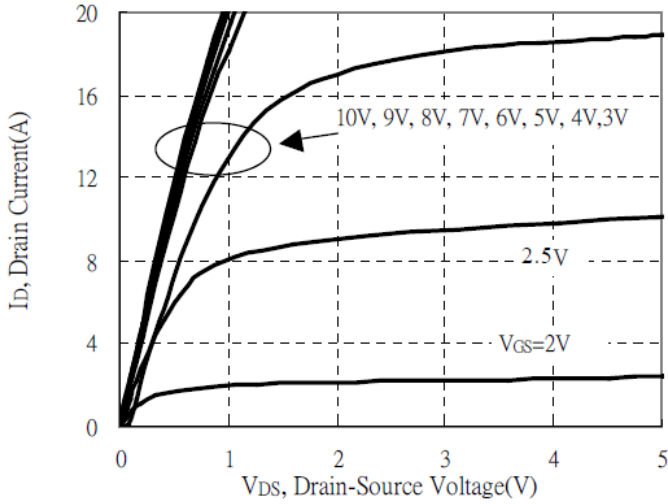
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-30	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> = -250μA	
Gate Threshold Voltage	V <sub>GS(th)</sub>	-0.5	-	-1.5	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250μA	
Forward Transconductance	g <sub>fs</sub>	-	4	-	S	V <sub>DS</sub> = -5V, I <sub>D</sub> = -2.3A	
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±12V	
Drain-Source Leakage Current	I <sub>DSS</sub>	T <sub>J</sub> =25°C	-	-	-1	μA	V <sub>DS</sub> = -24V, V <sub>GS</sub> =0
		T <sub>J</sub> =70°C	-	-	-10		V <sub>DS</sub> = -24V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance <sup>4</sup>	R <sub>DS(ON)</sub>	-	-	110	mΩ	V <sub>GS</sub> = -10V, I <sub>D</sub> = -2.3A	
		-	-	145		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2A	
		-	-	190		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -1A	
Total Gate Charge	Q <sub>g</sub>	-	11.4	-	nC	I <sub>D</sub> = -2.3A V <sub>DS</sub> = -15V V <sub>GS</sub> = -10V	
Gate-Source Charge	Q <sub>gs</sub>	-	1.3	-			
Gate-Drain Charge	Q <sub>gd</sub>	-	0.7	-			
Turn-on Delay Time	T <sub>d(on)</sub>	-	4.4	-	nS	V <sub>DS</sub> = -15V I <sub>D</sub> = -2.3A V <sub>GS</sub> = -10V R <sub>G</sub> =6Ω	
Rise Time	T <sub>r</sub>	-	17.2	-			
Turn-off Delay Time	T <sub>d(off)</sub>	-	43	-			
Fall Time	T <sub>f</sub>	-	6.8	-			
Input Capacitance	C <sub>iss</sub>	-	480	-	pF	V <sub>GS</sub> =0 V <sub>DS</sub> = -15V f=1MHz	
Output Capacitance	C <sub>oss</sub>	-	63	-			
Reverse Transfer Capacitance	C <sub>rss</sub>	-	33	-			
<b>Source-Drain Diode</b>							
Forward on Voltage <sup>4</sup>	V <sub>SD</sub>	-	-	-1	V	I <sub>S</sub> = -1A, V <sub>GS</sub> =0	
Reverse Recovery Time	t <sub>rr</sub>	-	7	-	nS	I <sub>F</sub> = -1A, V <sub>GS</sub> =0	
Reverse Recovery Charge	Q <sub>rr</sub>	-	2.9	-	nC	di/dt=100A/μs	

Notes:

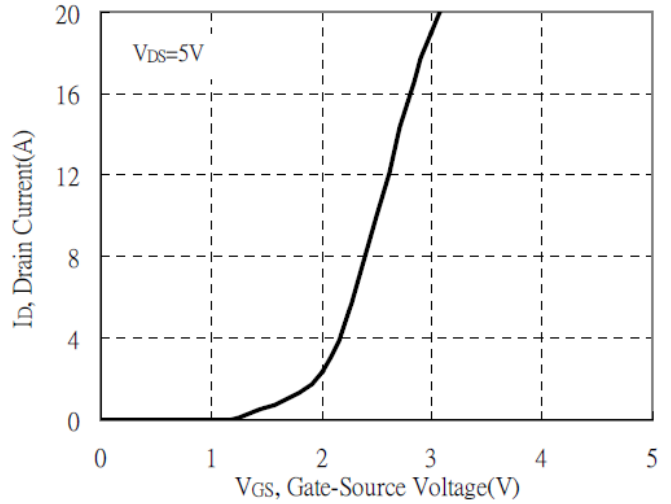
1. Surface Mounted on 1"x1" FR4 Board with 2OZ copper.
2. When mounted on Min. copper pad.
3. Pulse width limited by maximum junction temperature, Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

**CHARACTERISTICS CURVE (N-Channel)**

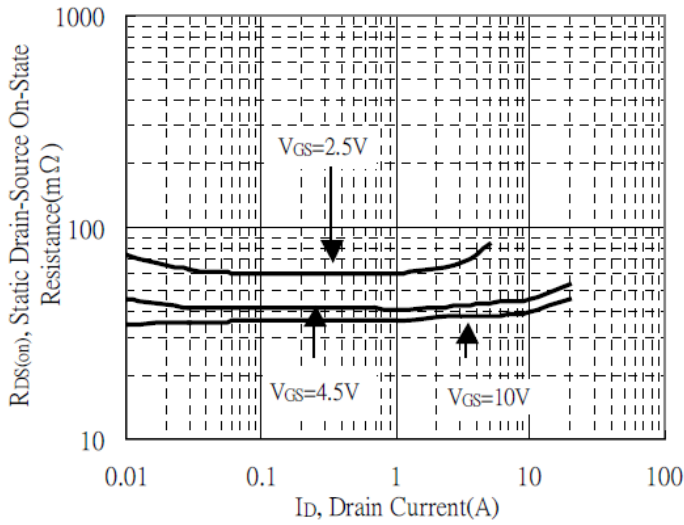
Typical Output Characteristics



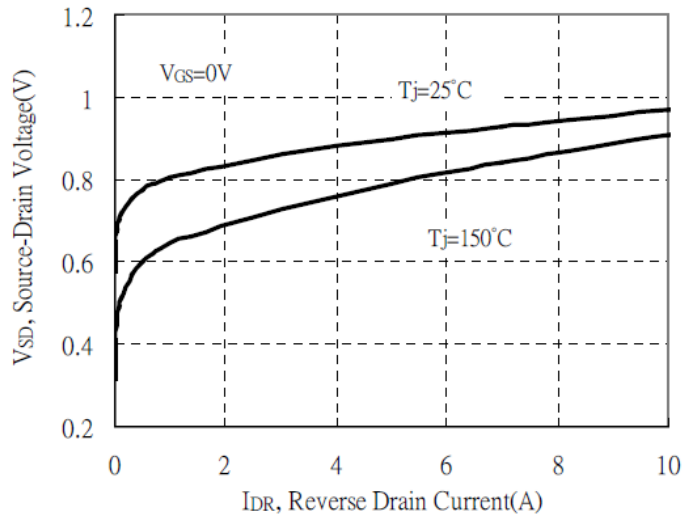
Typical Transfer Characteristics



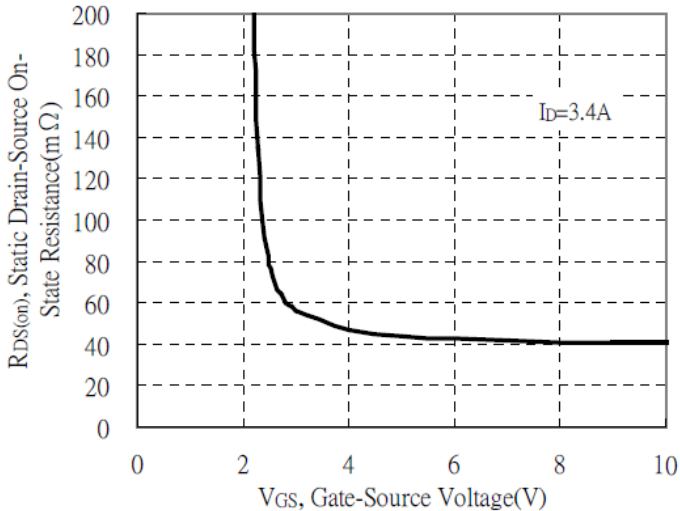
Static Drain-Source On-State resistance vs Drain Current



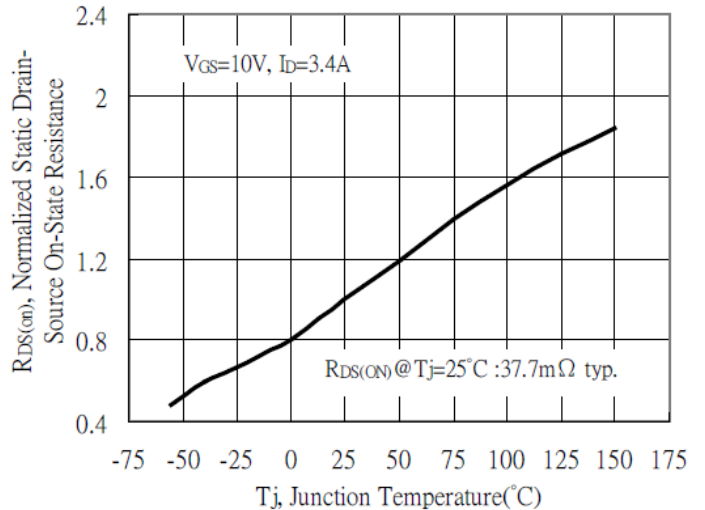
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

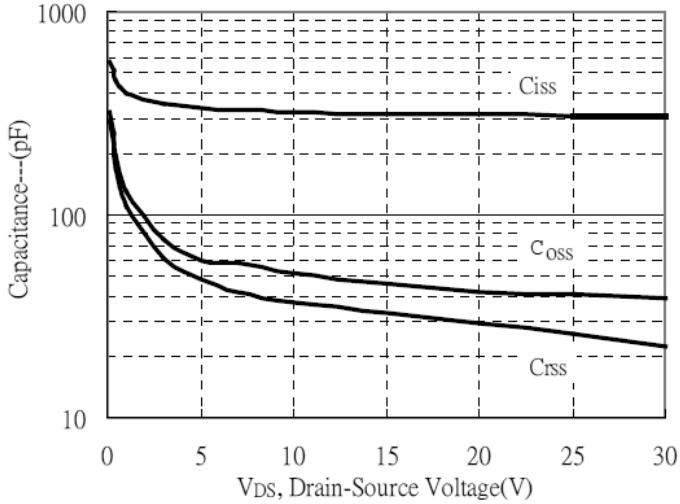


Drain-Source On-State Resistance vs Junction Temperature

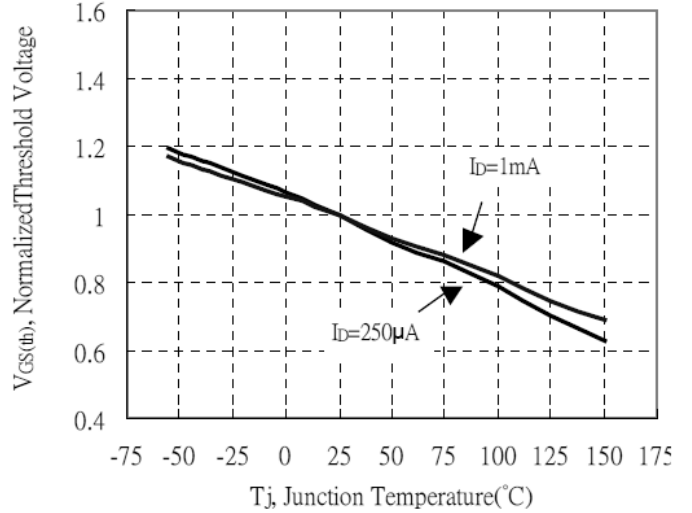


**CHARACTERISTICS CURVE (N-Channel)**

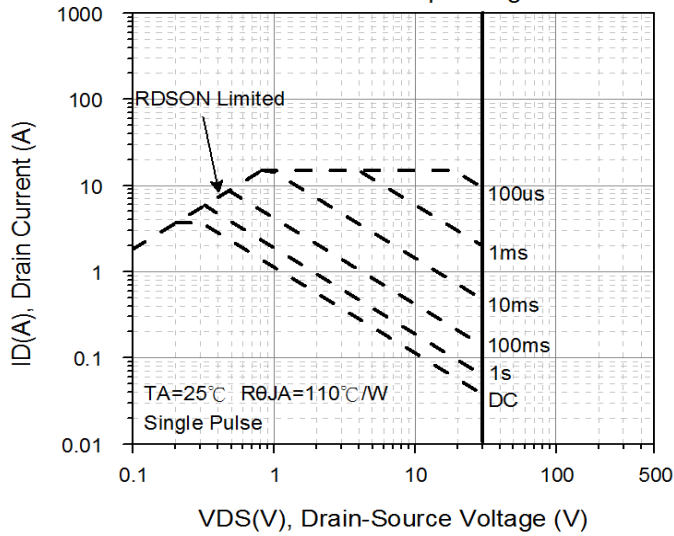
Capacitance vs Drain-to-Source Voltage



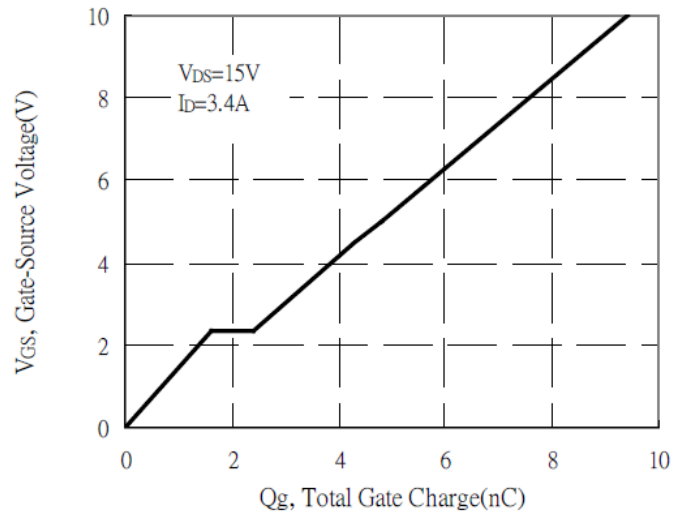
Threshold Voltage vs Junction Temperature



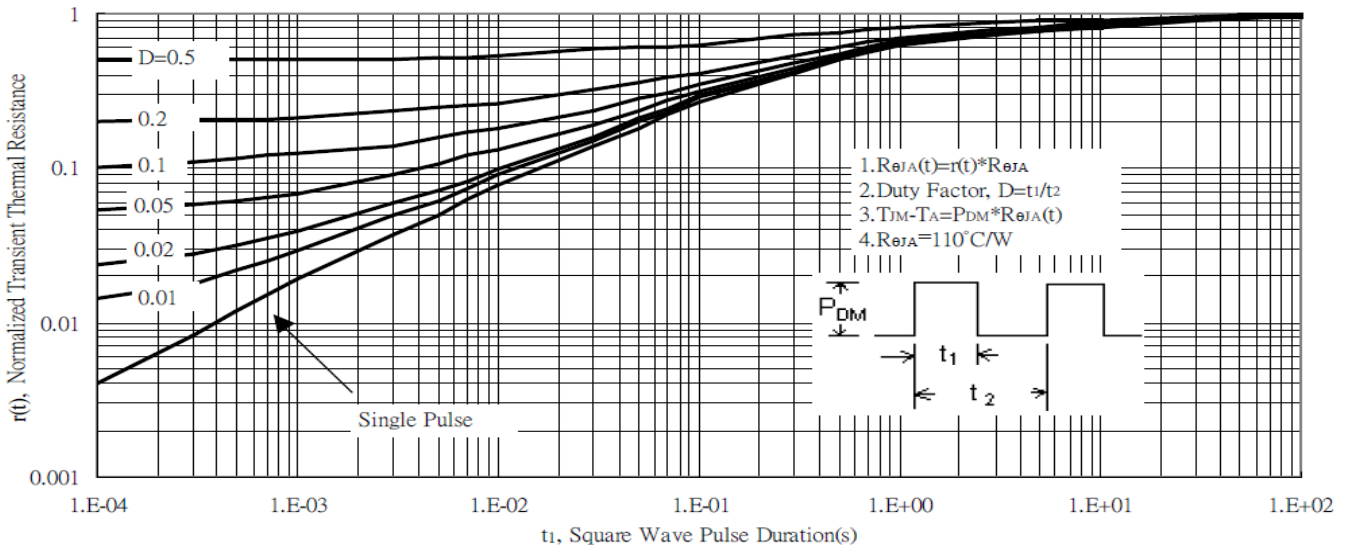
Maximum Safe Operating Area



Gate Charge Characteristics

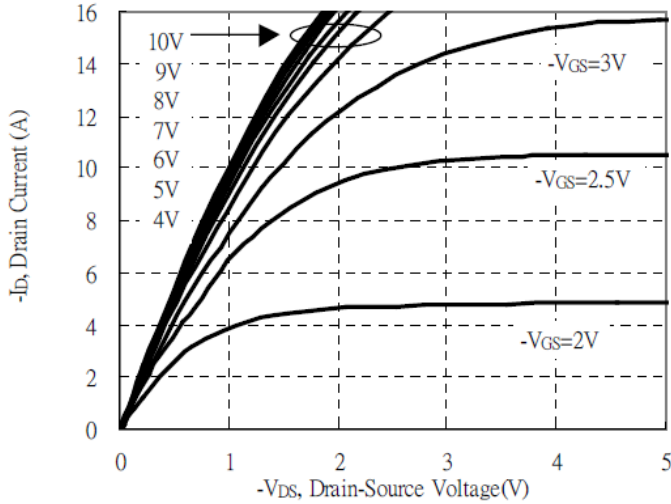


Transient Thermal Response Curves

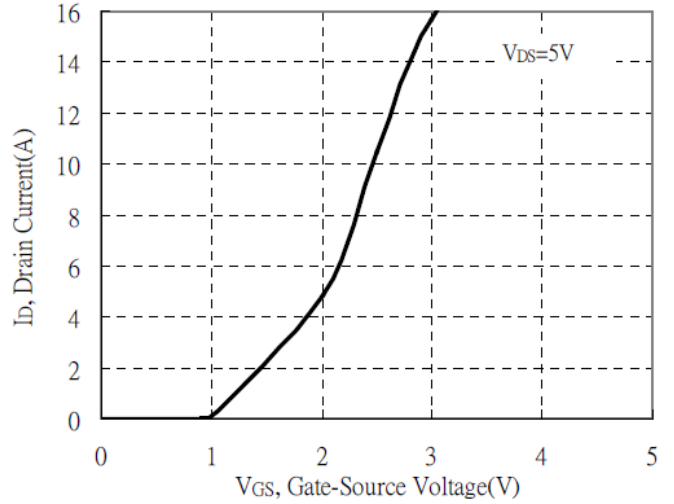


**CHARACTERISTICS CURVE (P-Channel)**

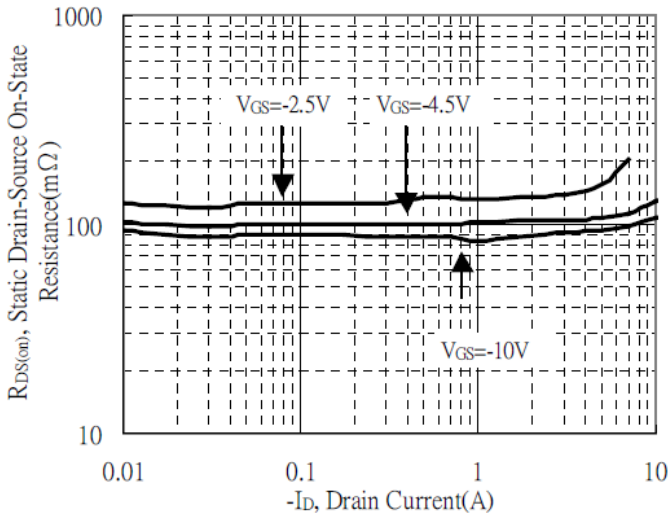
Typical Output Characteristics



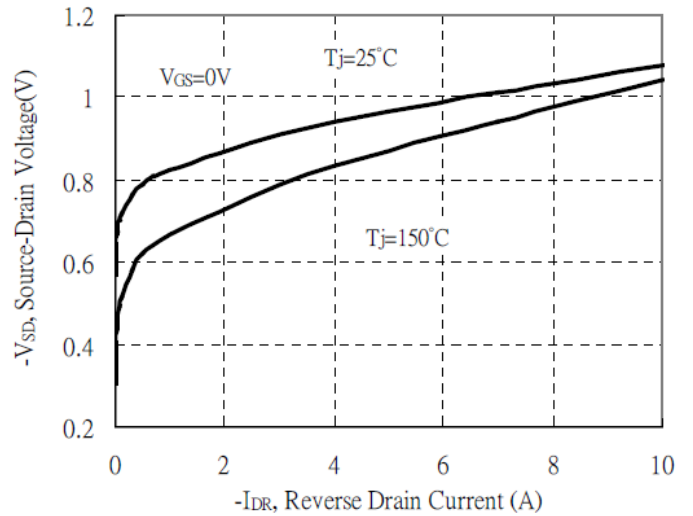
Typical Transfer Characteristics



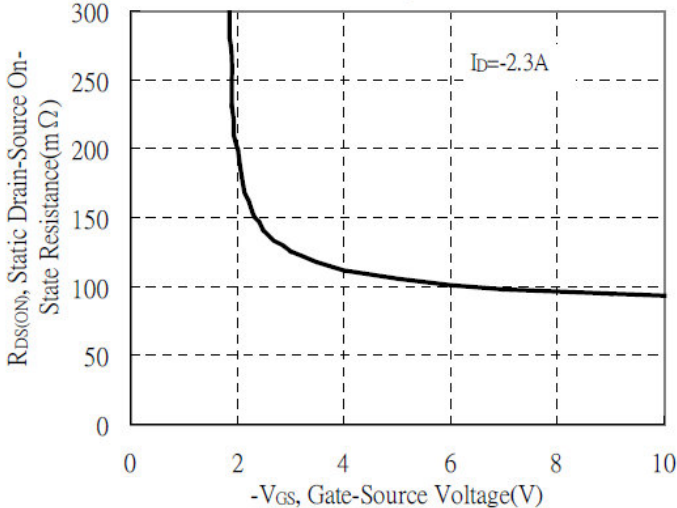
Static Drain-Source On-State resistance vs Drain Current



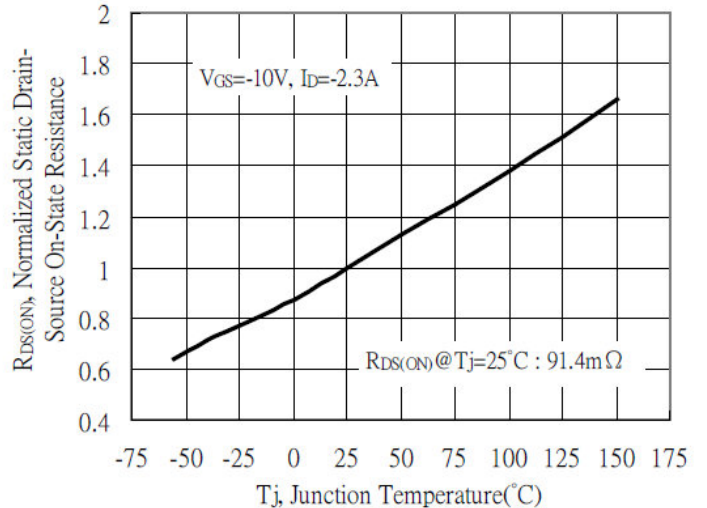
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

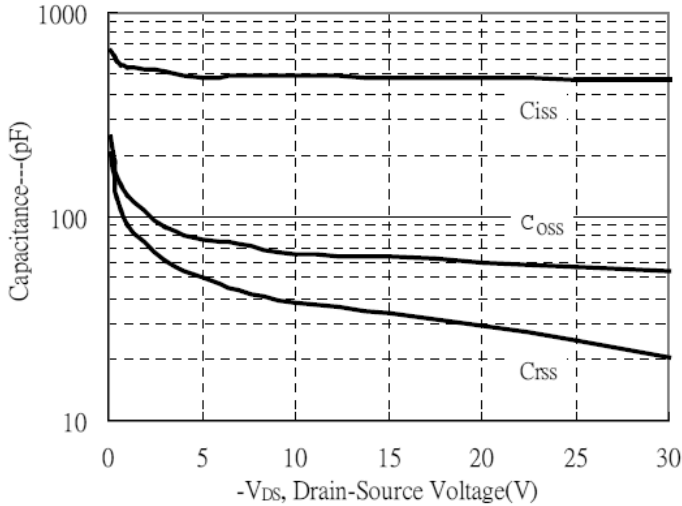


Drain-Source On-State Resistance vs Junction Temperature

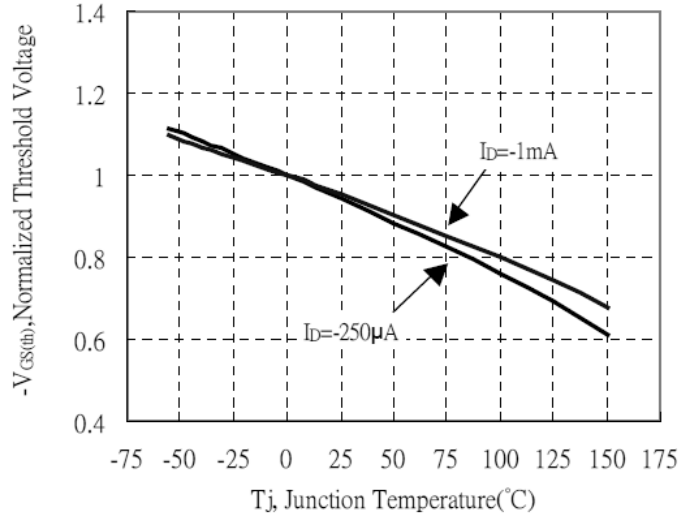


**CHARACTERISTICS CURVE (P-Channel)**

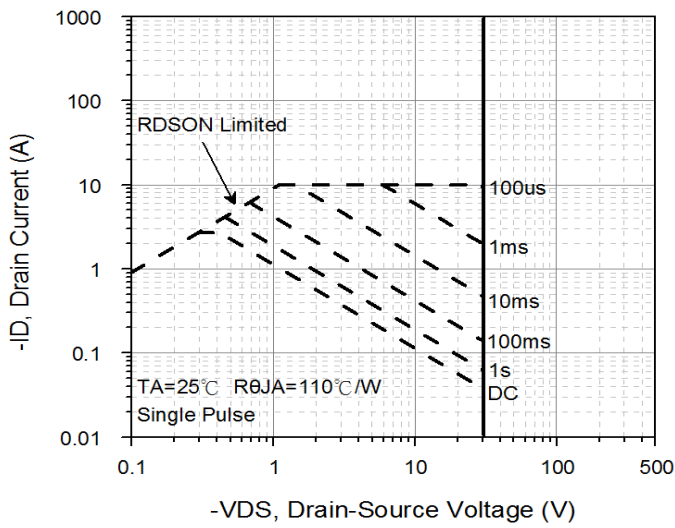
Capacitance vs Drain-to-Source Voltage



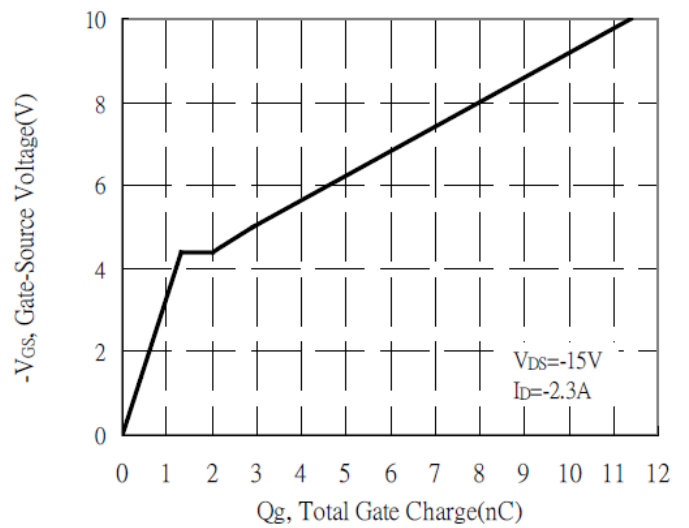
Threshold Voltage vs Junction Temperature



Maximum Safe Operating Area



Gate Charge Characteristics



Transient Thermal Response Curves

