

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

FEATURES

- Reliable and Rugged
- Green Device Available

APPLICATION

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

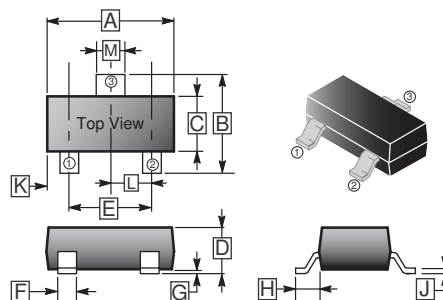
MARKING

G5

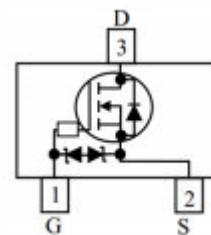
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-523	3K	7 inch

SOT-523



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.5	1.7	G	-	0.1
B	1.45	1.75	H	0.55 REF.	
C	0.7	0.9	J	0.1	0.2
D	0.7	0.9	K	-	
E	0.9	1.1	L	0.5 TYP.	
F	0.15	0.35	M	0.25	0.35



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ¹ , $V_{GS}@4.5\text{V}$	$T_A=25^\circ\text{C}$	0.65	A
	$T_A=70^\circ\text{C}$	0.52	A
Pulsed Drain Current ³	I_{DM}	1.6	A
Power Dissipation	$T_A=25^\circ\text{C}$	0.3	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Rating			
Thermal Resistance from Junction to Ambient ¹	$R_{\theta JA}$	417	$^\circ\text{C} / \text{W}$
Thermal Resistance from Junction to Ambient ²		833	

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise specified)

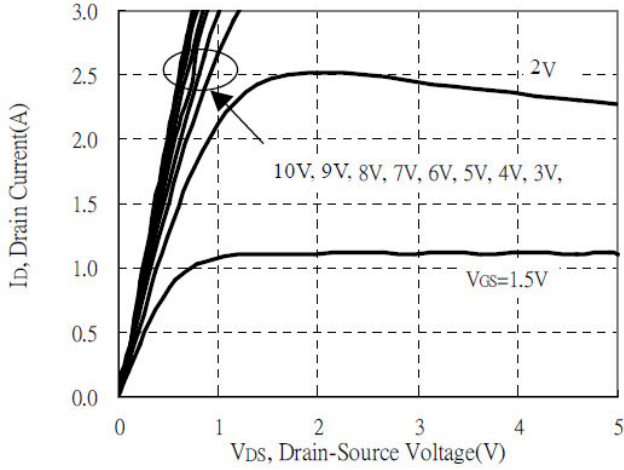
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition	
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$	
Gate Threshold Voltage	$V_{GS(th)}$	0.45	-	1	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	
Forward Transfer conductance	g_{fs}	-	2	-	S	$V_{DS}=5\text{V}, I_D=0.6\text{A}$	
Gate-Body Leakage Current	I_{GSS}	-	-	± 10	μA	$V_{GS}=\pm 12\text{V}$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{GS}=0, V_{DS}=16\text{V}$
		$T_J=70^\circ\text{C}$	-	-	25		
Static Drain-Source On-Resistance ⁴	$R_{DS(ON)}$	-	-	350	m Ω	$V_{GS}=4.5\text{V}, I_D=0.55\text{A}$	
		-	-	700		$V_{GS}=2.5\text{V}, I_D=0.45\text{A}$	
		-	-	950		$V_{GS}=1.8\text{V}, I_D=0.35\text{A}$	
Total Gate Charge	Q_g	-	1.3	-	nC	$I_D=0.5\text{A}$ $V_{DS}=15\text{V}$ $V_{GS}=4.5\text{V}$	
Gate-Source Charge	Q_{gs}	-	0.5	-			
Gate-Drain ("Miller") Charge	Q_{gd}	-	0.1	-			
Turn-on Delay Time	$T_{d(on)}$	-	2.6	-	nS	$V_{DS}=10\text{V}$ $I_D=0.5\text{A}$ $V_{GS}=10\text{V}$ $R_G=1\Omega$	
Rise Time	T_r	-	16	-			
Turn-off Delay Time	$T_{d(off)}$	-	29.8	-			
Fall Time	T_f	-	11	-			
Input Capacitance	C_{iss}	-	64	-	pF	$V_{DS}=10\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	17	-			
Reverse Transfer Capacitance	C_{rss}	-	20	-			
Source-Drain Diode							
Continuous Source Current ¹	I_S	-	-	0.65	A		
Pulsed Source Current ³	I_{SM}	-	-	1.6	A		
Forward On Voltage ⁴	V_{SD}	-	-	1.2	V	$V_{GS}=0, I_S=0.15\text{A}$	
Reverse Recovery Time	t_{rr}	-	4.9	-	nS	$I_F=0.5\text{A},$ $dI/dt=100\text{A}/\mu\text{s},$ $T_J=25^\circ\text{C}$	
Reverse Recovery Charge	Q_{rr}	-	1	-	nC		

Notes:

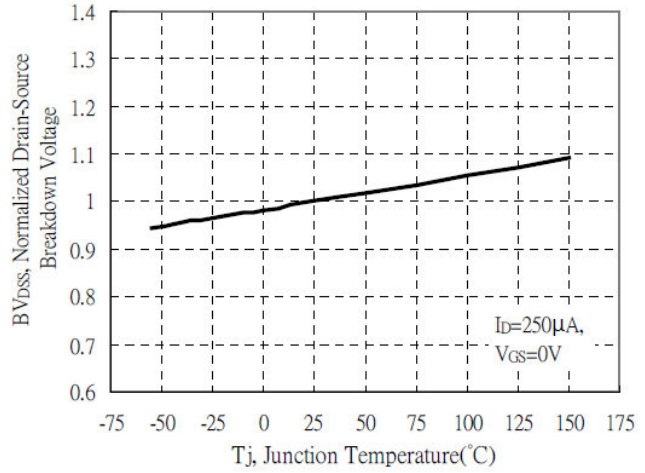
- Surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- When mounted on Min. copper pad.
- The power dissipation is limited by 150 $^\circ\text{C}$ junction temperature
- The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

TYPICAL CHARACTERISTIC CURVES

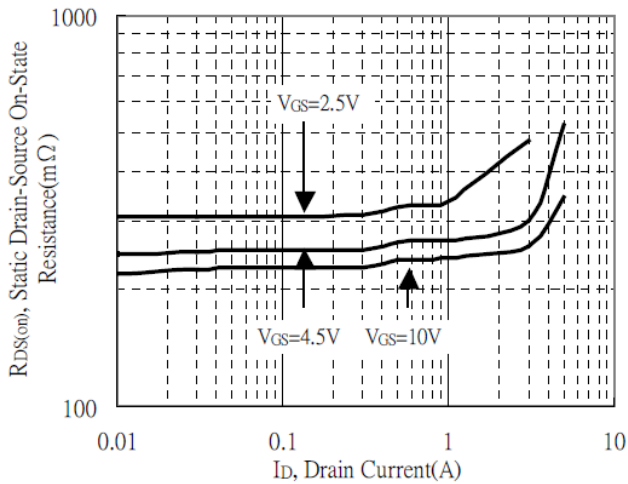
Typical Output Characteristics



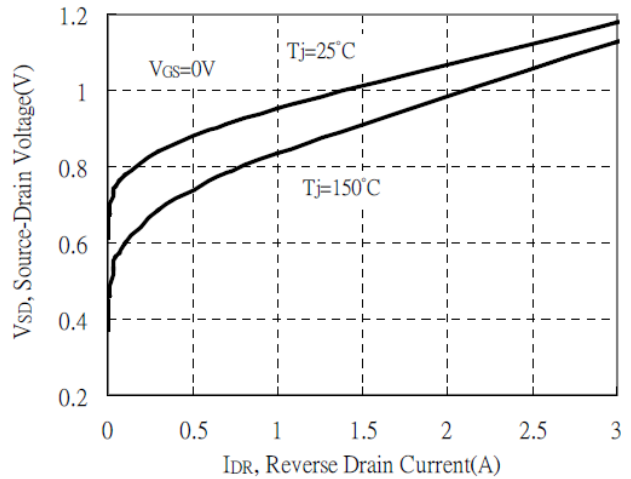
Brekdown Voltage vs Ambient Temperature



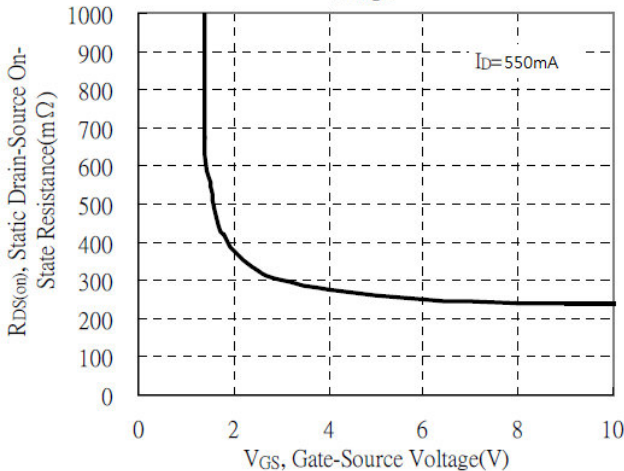
Static Drain-Source On-State resistance vs Drain Current



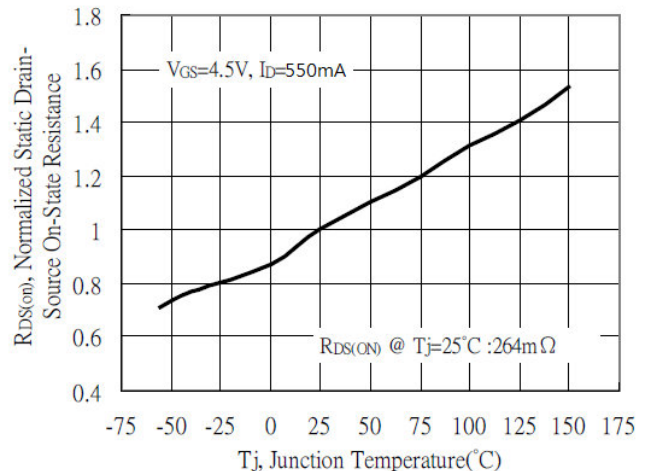
Reverse Drain Current vs Source-Drain Voltage



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

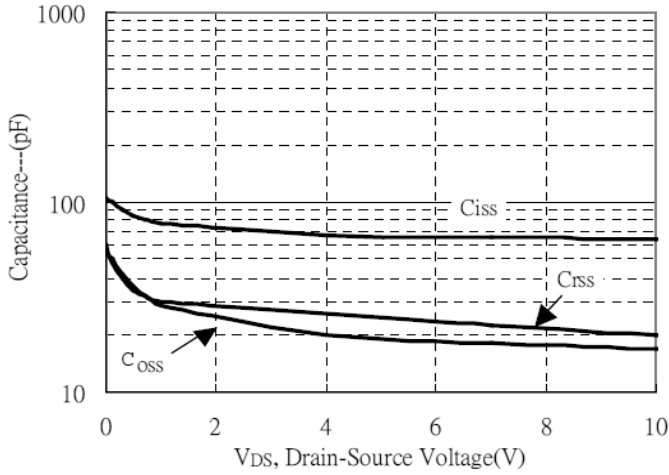


Drain-Source On-State Resistance vs Junction Temperature

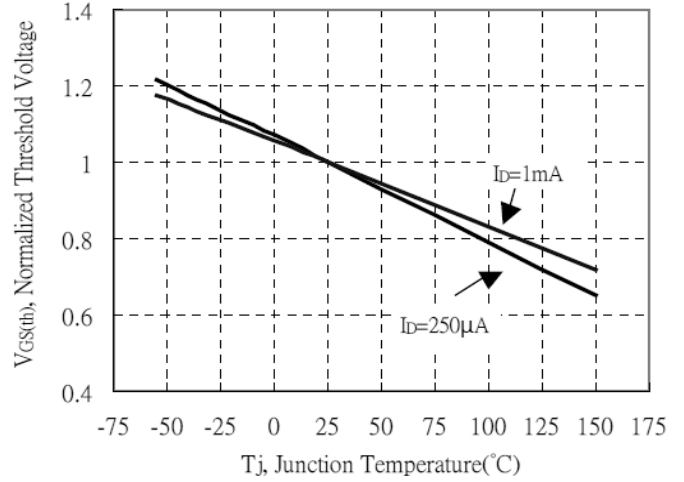


TYPICAL CHARACTERISTIC CURVES

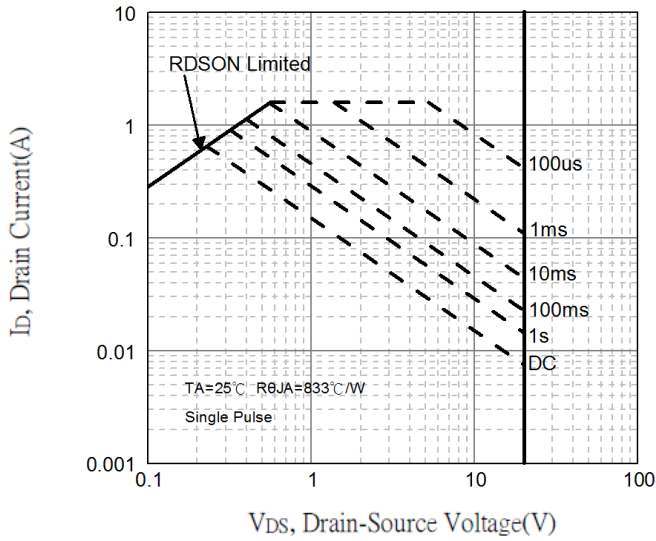
Capacitance vs Drain-to-Source Voltage



Threshold Voltage vs Junction Temperature



Maximum Safe Operating Area



Gate Charge Characteristics

