



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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Contact us

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Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



V_{DSS}	-20V
$R_{DS(on)}(Max.)$	59mΩ
I_D	±3.5A
P_D	1W

●Features

- 1) Low on - resistance.
- 2) High Power small mold Package (TSMT3).
- 3) Pb-free lead plating ; RoHS compliant.
- 4) Halogen Free.

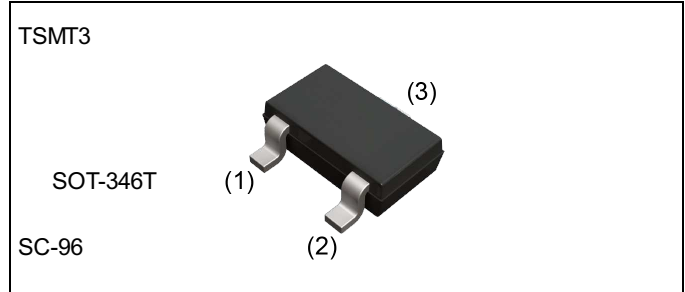
●Application

Switching
Load switch

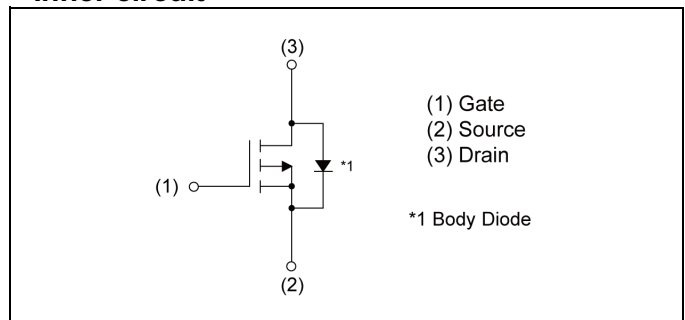
●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Drain - Source voltage	V_{DSS}	-20	V
Continuous drain current	I_D^{*1}	±3.5	A
Pulsed drain current	$I_{D,pulse}^{*2}$	±12	A
Gate - Source voltage	V_{GSS}	±8	V
Avalanche energy, single pulse	E_{AS}^{*3}	9.3	mJ
Avalanche current	I_{AS}^{*3}	-3.5	A
Power dissipation	P_D^{*4}	1	W
	P_D^{*5}	0.55	W
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	-55 to +150	°C

●Outline



●Inner circuit



●Packaging specifications

Type	Packing	Embossed Tape
	Reel size (mm)	180
Tape width (mm)	8	
Basic ordering unit (pcs)	3000	
Taping code	TCL	
Marking	JJ	

● Thermal resistance

Parameter	Symbol	Values			Unit
		Min.	Typ.	Max.	
Thermal resistance, junction - ambient	R_{thJA}^{*4}	-	-	125	°C/W
	R_{thJA}^{*5}	-	-	227	°C/W

● Electrical characteristics ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Drain - Source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -1mA$	-20	-	-	V
Breakdown voltage temperature coefficient	$\frac{\Delta V_{(BR)DSS}}{\Delta T_j}$	$I_D = -1mA$ referenced to 25°C	-	-10.3	-	mV/°C
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$	-	-	-1	μA
Gate - Source leakage current	I_{GSS}	$V_{GS} = \pm 8V, V_{DS} = 0V$	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -1mA$	-0.5	-	-1.2	V
Gate threshold voltage temperature coefficient	$\frac{\Delta V_{GS(th)}}{\Delta T_j}$	$I_D = -1mA$ referenced to 25°C	-	1.7	-	mV/°C
Static drain - source on - state resistance	$R_{DS(on)}^{*6}$	$V_{GS} = -4.5V, I_D = -3.5A$	-	42	59	mΩ
		$V_{GS} = -2.5V, I_D = -3.5A$	-	54	76	
		$V_{GS} = -1.8V, I_D = -0.9A$	-	84	135	
Gate input resistance	R_G	$f = 1MHz, \text{open drain}$	-	9.5	-	Ω
Forward Transfer Admittance	$ Y_{fs} ^{*6}$	$V_{DS} = -5V, I_D = -3.5A$	4.3	-	-	S

*1 $V_{GS} \geq 2.5V$

*2 $P_w \leq 10\mu s, \text{Duty cycle} \leq 1\%$

*3 $L \approx 1mH, V_{DD} = -10V, R_G = 25\Omega, \text{STARTING } T_j = 25^\circ\text{C}$ Fig.3-1,3-2

*4 Mounted on a ceramic board (30×30×0.8mm)

*5 Mounted on a FR4 (12×20×0.8mm)

*6 Pulsed

●Electrical characteristics ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Input capacitance	C_{iss}	$V_{GS} = 0V$	-	460	-	pF
Output capacitance	C_{oss}	$V_{DS} = -10V$	-	90	-	
Reverse transfer capacitance	C_{rss}	$f = 1\text{MHz}$	-	80	-	
Turn - on delay time	$t_{d(on)}^{*6}$	$V_{DD} \approx -10V, V_{GS} = -4.5V$	-	9	-	ns
Rise time	t_r^{*6}	$I_D = -1.75A$	-	30	-	
Turn - off delay time	$t_{d(off)}^{*6}$	$R_L \approx 5.7\Omega$	-	50	-	
Fall time	t_f^{*6}	$R_G = 10\Omega$	-	30	-	

●Gate charge characteristics ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Total gate charge	Q_g^{*6}	$V_{DD} \approx -10V,$ $I_D = -3.5A,$ $V_{GS} = -4.5V$	-	6.5	-	nC
Gate - Source charge	Q_{gs}^{*6}		-	0.9	-	
Gate - Drain charge	Q_{gd}^{*6}		-	2.2	-	

●Body diode electrical characteristics (Source-Drain) ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Body diode continuous forward current	I_S	$T_a = 25^\circ\text{C}$	-	-	-0.8	A
Body diode pulse current	I_{SP}^{*2}		-	-	-12	A
Forward voltage	V_{SD}^{*6}	$V_{GS} = 0V, I_S = -0.8A$	-	-	-1.2	V

● Electrical characteristic curves

Fig.1 Power Dissipation Derating Curve

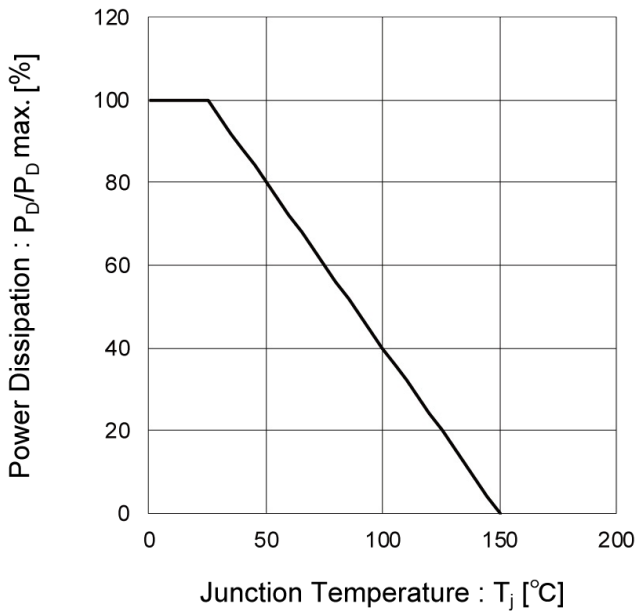


Fig.2 Maximum Safe Operating Area

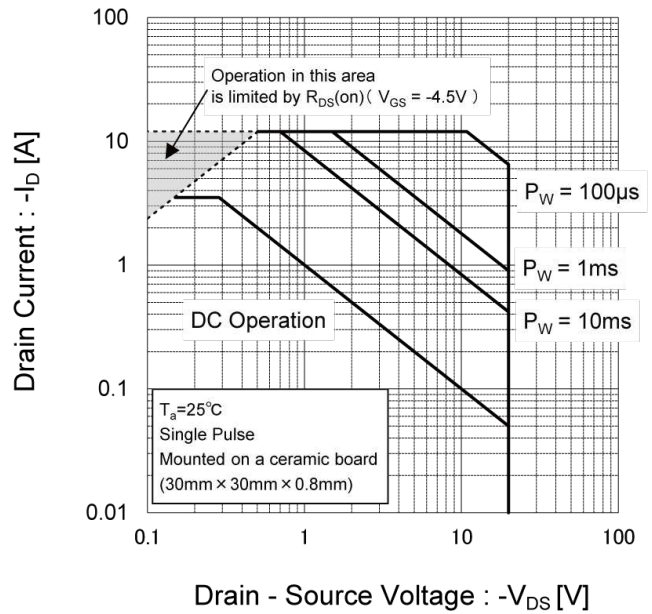


Fig.3 Normalized Transient Thermal Resistance vs. Pulse Width

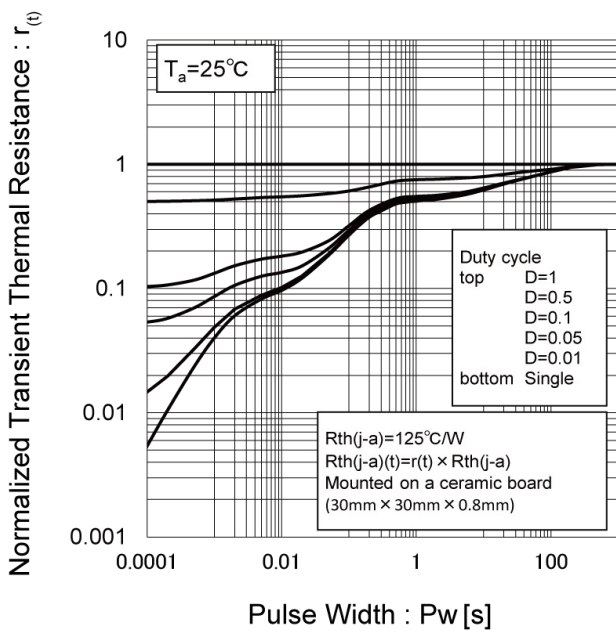
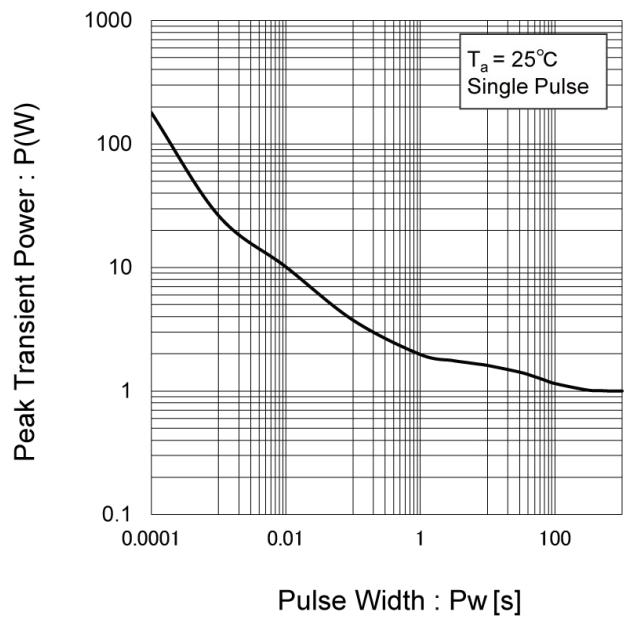


Fig.4 Single Pulse Maximum Power dissipation



● Electrical characteristic curves

Fig.5 Typical Output Characteristics(I)

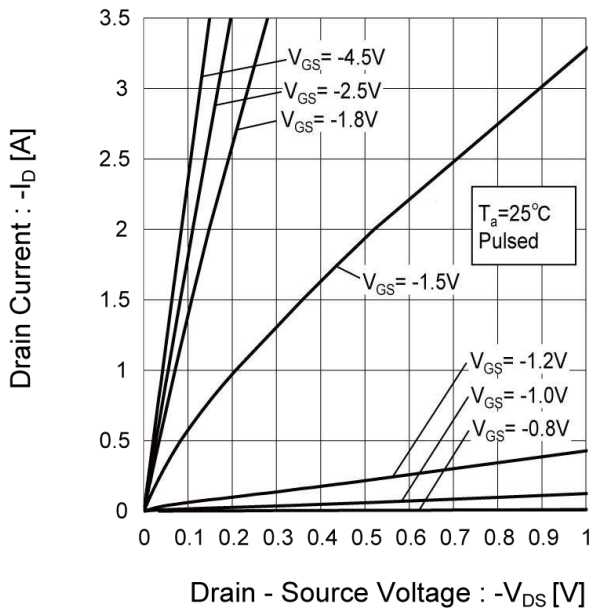


Fig.6 Typical Output Characteristics(II)

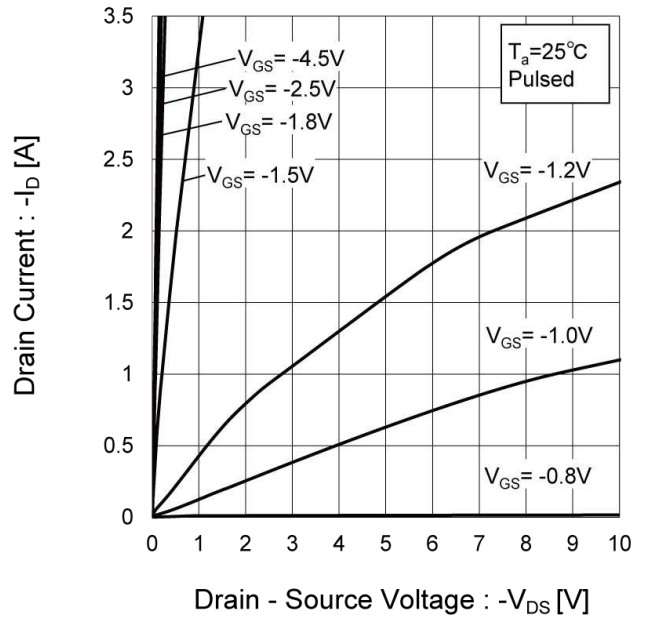
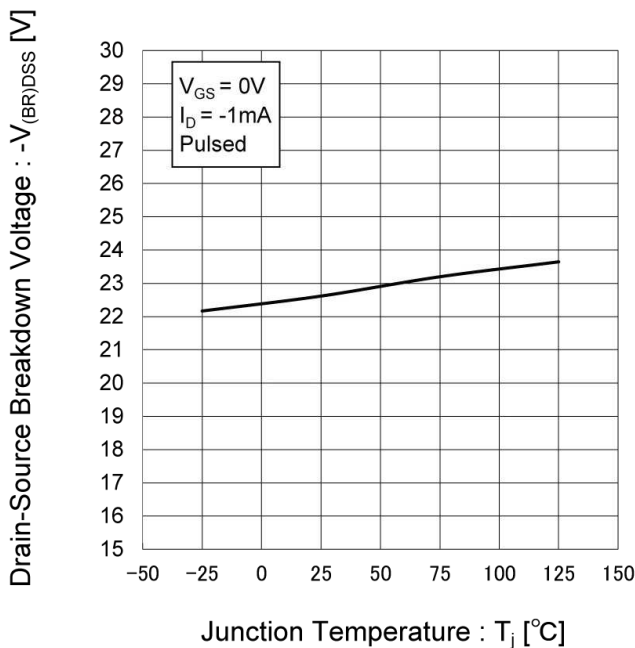


Fig.7 Breakdown Voltage vs. Junction Temperature



●Electrical characteristic curves

Fig.8 Typical Transfer Characteristics

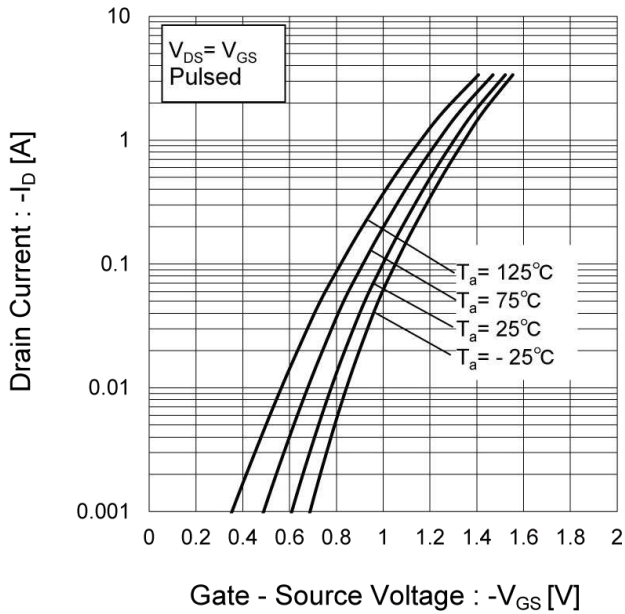


Fig.9 Gate Threshold Voltage vs. Junction Temperature

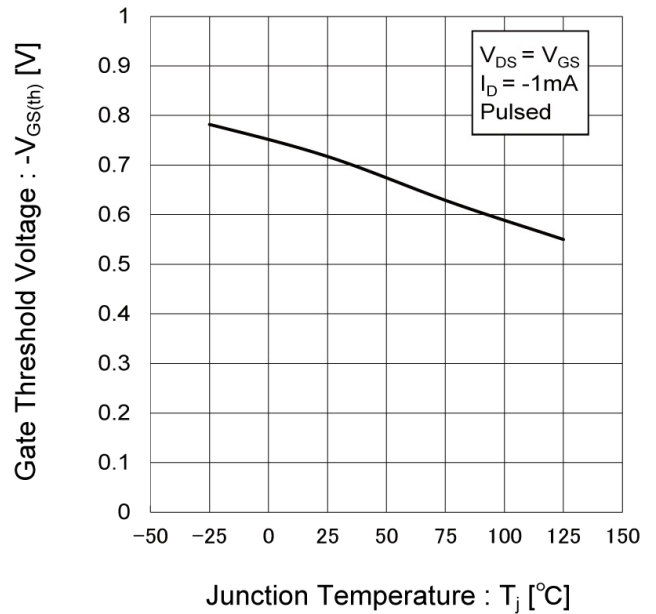
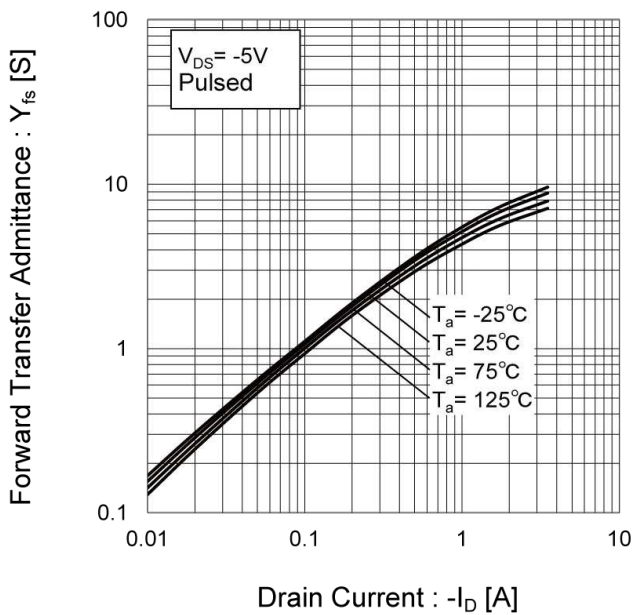


Fig.10 Forward Transfer Admittance vs. Drain Current



● Electrical characteristic curves

Fig.11 Drain Current Derating Curve

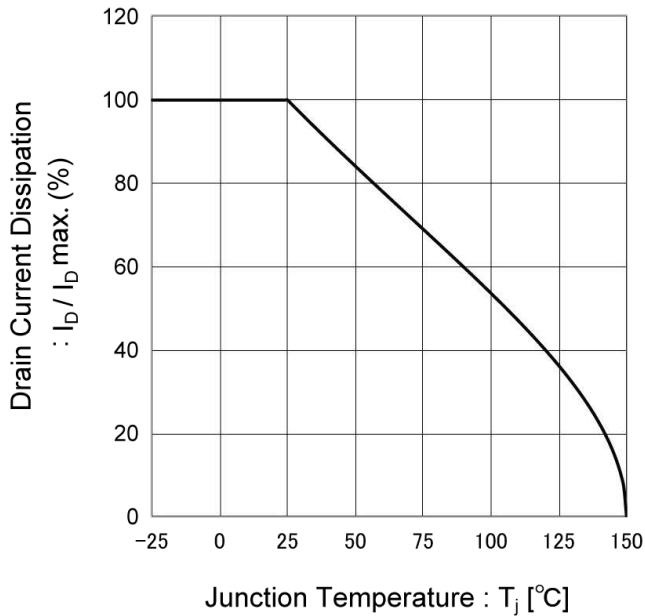


Fig.12 Static Drain - Source On - State Resistance vs. Gate Source Voltage

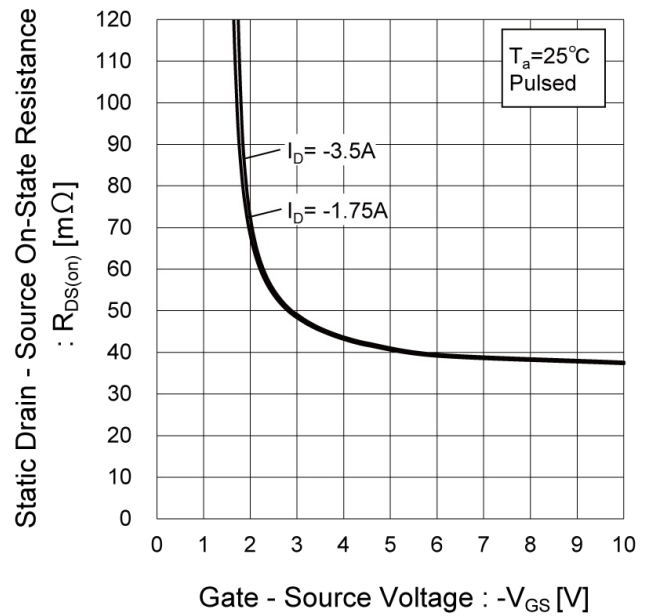
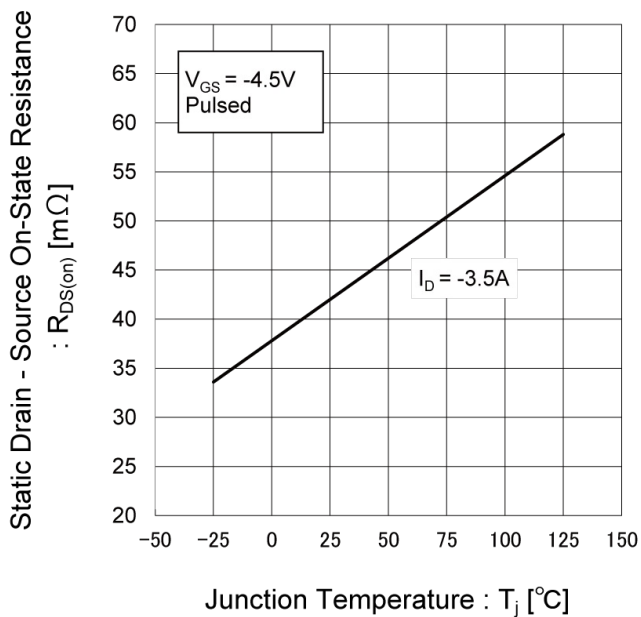


Fig.13 Static Drain - Source On - State Resistance vs. Junction Temperature



● Electrical characteristic curves

Fig.14 Static Drain - Source On - State Resistance vs. Drain Current(I)

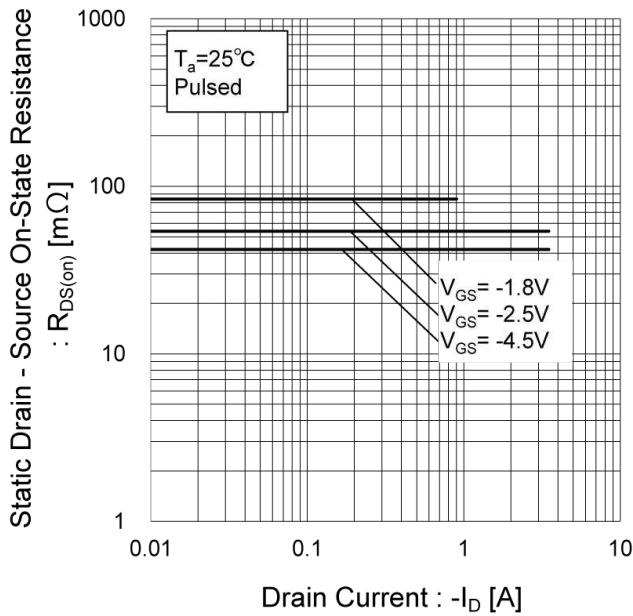


Fig.15 Static Drain - Source On - State Resistance vs. Drain Current(II)

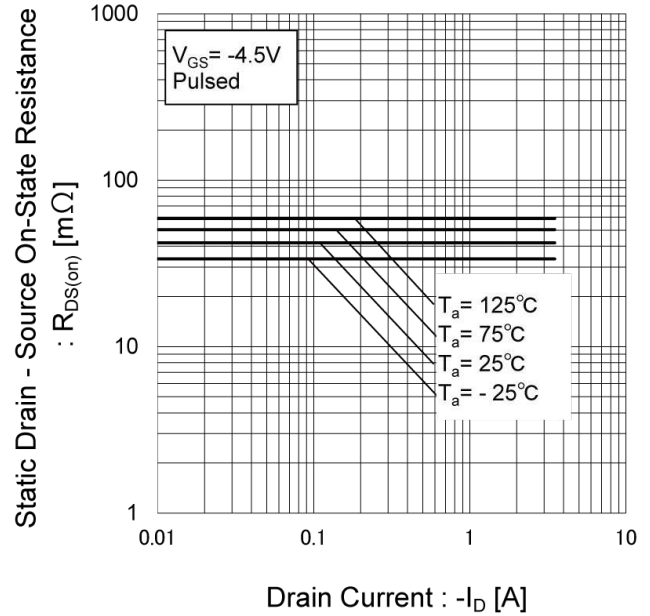


Fig.16 Static Drain - Source On - State Resistance vs. Drain Current(III)

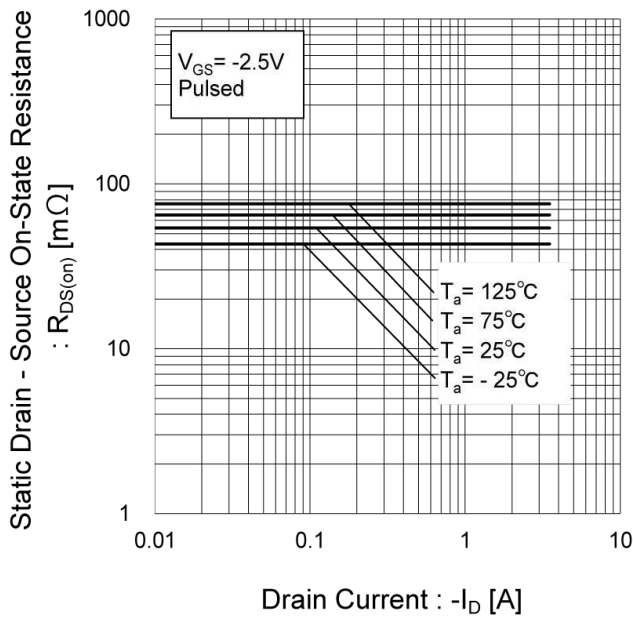
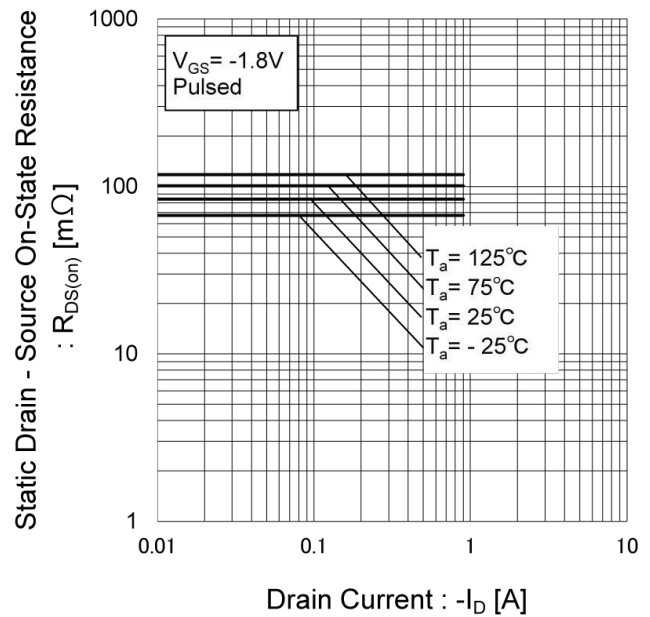


Fig.17 Static Drain - Source On - State Resistance vs. Drain Current(IV)



● Electrical characteristic curves

Fig.18 Typical Capacitance vs. Drain - Source Voltage

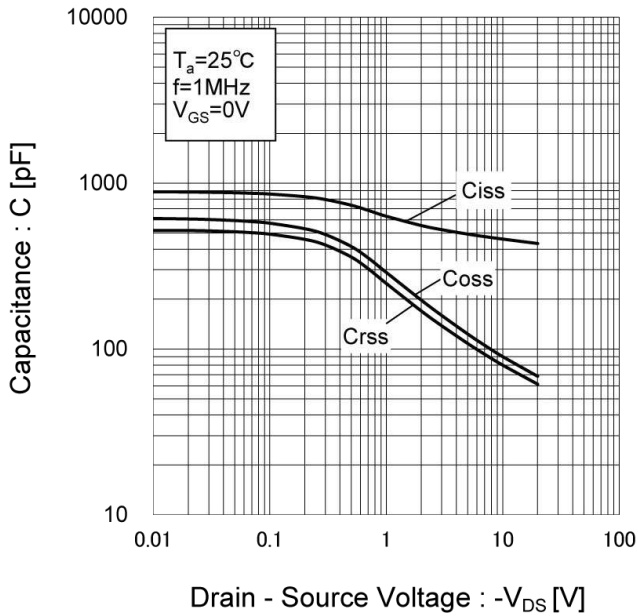


Fig.19 Switching Characteristics

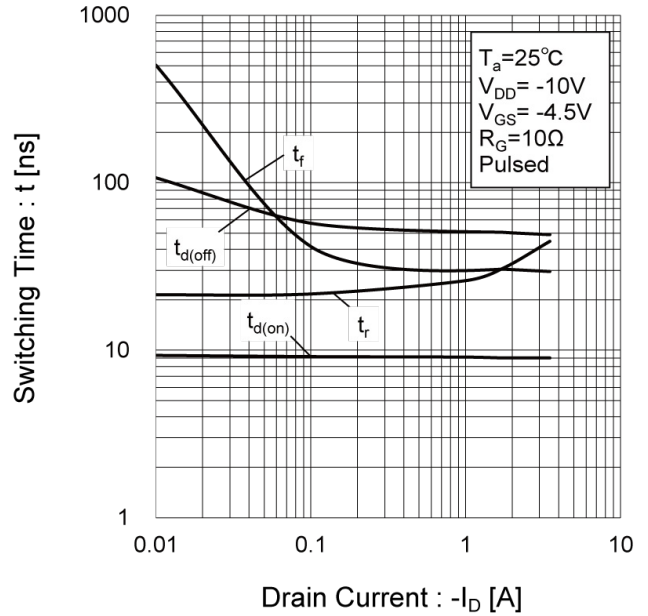


Fig.20 Dynamic Input Characteristics

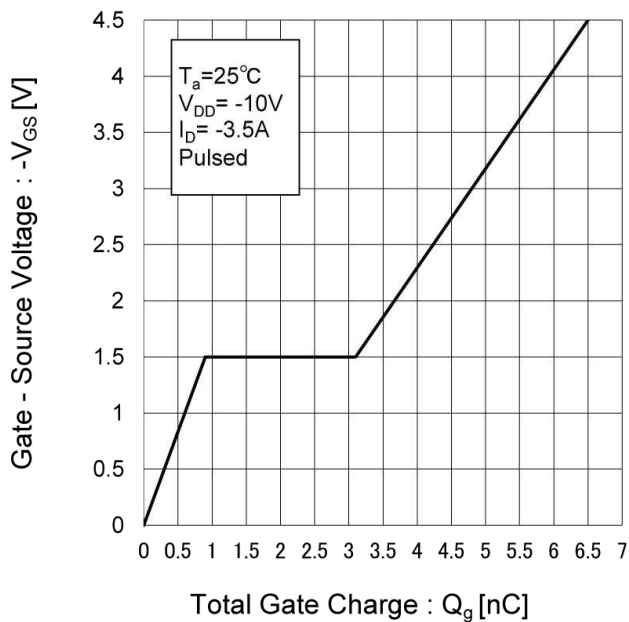
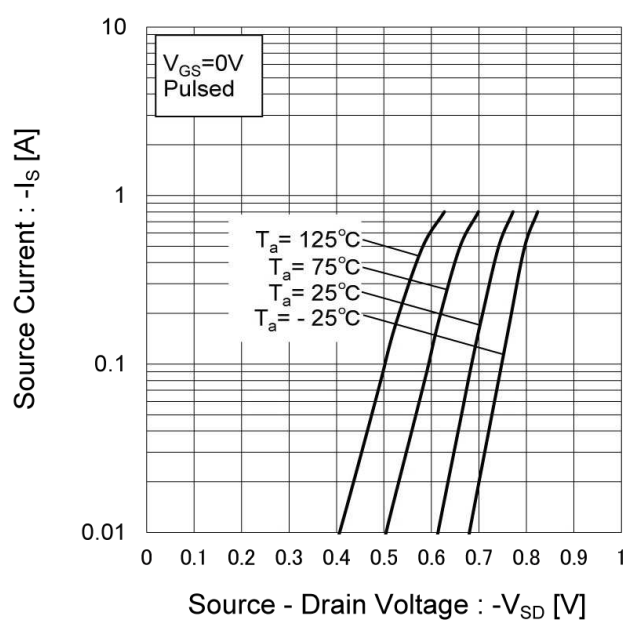


Fig.21 Source Current vs. Source Drain Voltage



● Measurement circuits

Fig.1-1 Switching Time Measurement Circuit

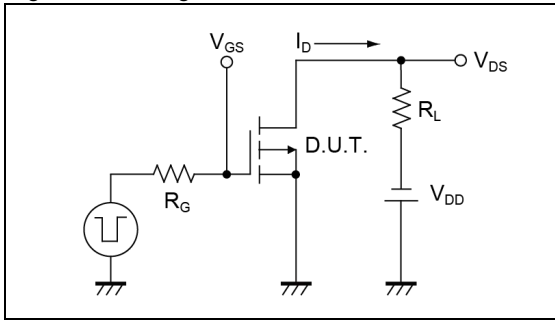


Fig.1-2 Switching Waveforms

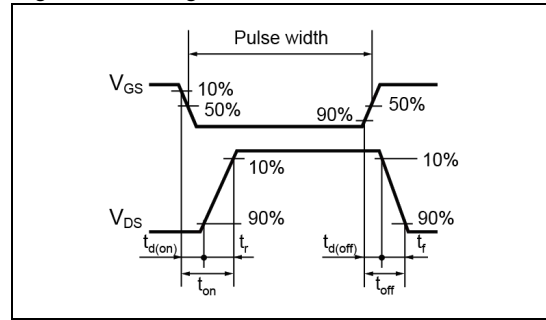


Fig.2-1 Gate Charge Measurement Circuit

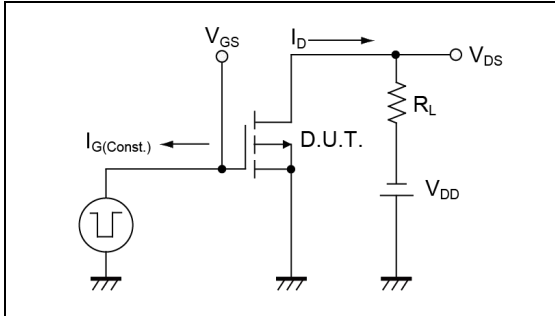


Fig.2-2 Gate Charge Waveform

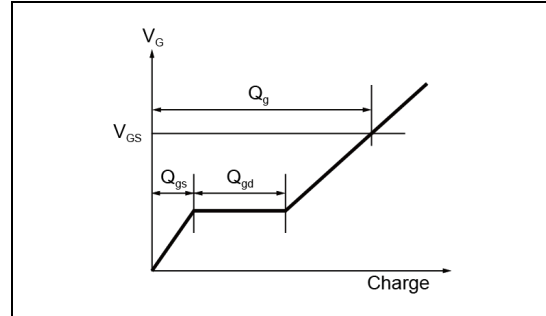


Fig.3-1 Avalanche Measurement Circuit

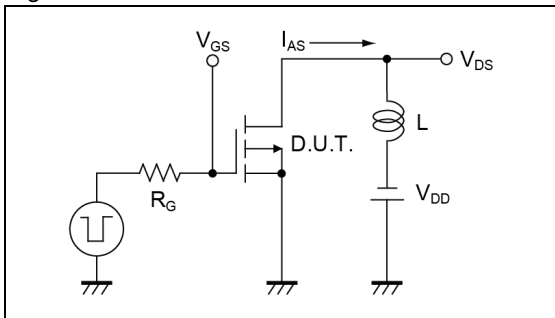
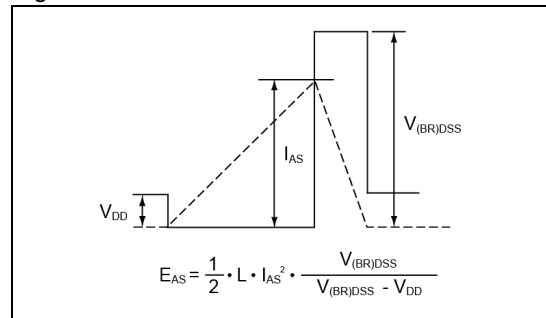


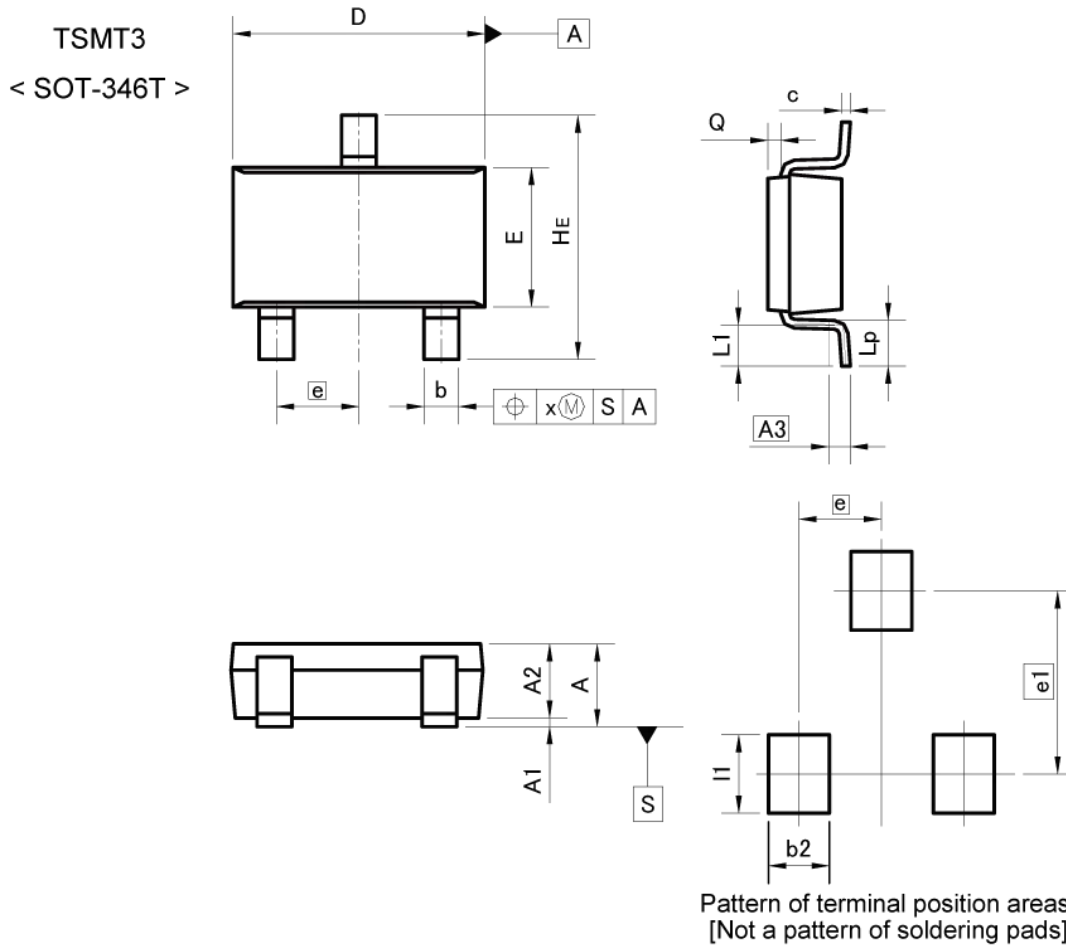
Fig.3-2 Avalanche Waveform



● Notice

This product might cause chip aging and breakdown under the large electrified environment. Please consider to design ESD protection circuit.

●Dimensions



Pattern of terminal position areas
[Not a pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	-	1.00	-	0.039
A1	0.00	0.10	0.000	0.004
A2	0.75	0.95	0.030	0.037
A3	0.25		0.010	
b	0.35	0.50	0.014	0.020
c	0.10	0.26	0.004	0.010
D	2.80	3.00	0.110	0.118
E	1.50	1.80	0.059	0.071
e	0.95		0.037	
HE	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.05	0.25	0.002	0.010
x	-	0.20	-	0.008

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.70	-	0.028
e1	2.10		0.083	
l1	-	0.90	-	0.035

Dimension in mm/inches

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RQ5C035BC - Web Page

[Distribution Inventory](#)

Part Number	RQ5C035BC
Package	TSMT3
Unit Quantity	3000
Minimum Package Quantity	3000
Packing Type	Taping
Constitution Materials List	inquiry
RoHS	Yes