RW1C026ZP

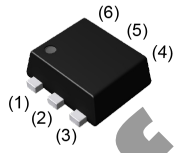
Pch -20V -2.5A Middle Power MOSFET

Datasheet

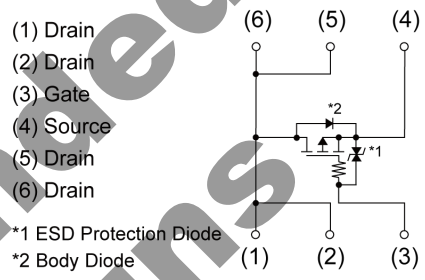
V_{DSS}	-20V
$R_{DS(on)}$(Max.)	70mΩ
I_D	±2.5A
P_D	0.7W

●Outline

WEMT6



●Inner circuit



●Features

1) Low on - resistance.
2) High Power small mold Package (WEMT6).
3) Pb-free lead plating ; RoHS compliant.
4) Halogen Free.

●Packaging specifications

Type	Packing	Embossed Tape
	Reel size (mm)	180
	Tape width (mm)	8
	Basic ordering unit (pcs)	8000
	Taping code	T2CR
	Marking	ZK

●Application

Switching

●Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Value	Unit
Drain - Source voltage	V_{DSS}	-20	V
Continuous drain current	I_D	±2.5	A
Pulsed drain current	$I_{D,pulse}$ *1	±10	A
Gate - Source voltage	V_{GSS}	±10	V
Power dissipation	P_D *2	0.7	W
Junction temperature	T_j	150	℃
Range of storage temperature	T_{stg}	-55 to +150	℃

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●Thermal resistance

Parameter	Symbol	Values			Unit
		Min.	Typ.	Max.	
Thermal resistance, junction - ambient	R_{thJA} *2	-	179	-	℃/W

●Electrical characteristics (T_a = 25°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℃	-	-21.9	-	mV/℃
Zero gate voltage drain current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V	-	-	-1	μA
Gate - Source leakage current	I_{GSS}	V_{GS} = ±10V, V_{DS} = 0V	-	-	±10	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = -10V, I_D = -1mA	-0.3	-	-1	V
Gate threshold voltage temperature coefficient	$\frac{\Delta V_{GS(th)}}{\Delta T_j}$	I_D = -1mA referenced to 25℃	-	2.4	-	mV/℃
Static drain - source on - state resistance	$R_{DS(on)}$ *3	V_{GS} = -4.5V, I_D = -2.5A	-	50	70	mΩ
		V_{GS} = -2.5V, I_D = -1.2A	-	65	90	
		V_{GS} = -1.8V, I_D = -1.2A	-	85	130	
		V_{GS} = -1.5V, I_D = -0.5A	-	100	200	
Transconductance	g_{fs} *3	V_{DS} = -10V, I_D = -2.5A	2.2	-	-	S

*1 Pw ≦ 10μs, Duty cycle ≦ 1%

*2 MOUNTED ON A CERAMIC BOARD

*3 Pulsed

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●Electrical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Input capacitance	C_{iss}	V_{GS} = 0V	-	1250	-	pF
Output capacitance	C_{oss}	V_{DS} = -10V	-	100	-	
Reverse transfer capacitance	C_{rss}	f = 1MHz	-	30	-	
Turn - on delay time	$t_{d(on)}$ *3	$V_{DD} \simeq$ -10V, V_{GS} = -4.5V	-	170	-	ns
Rise time	t_r *3	I_D = -1.2A	-	290	-	
Turn - off delay time	$t_{d(off)}$ *3	R_L = 8.3Ω	-	2550	-	
Fall time	t_f *3	R_G = 10Ω	-	850	-	

●Gate charge characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Total gate charge	Q_g *3	$V_{DD} \simeq$ -10V, I_D = -2.5A V_{GS} = -4.5V	-	10	-	nC
Gate - Source charge	Q_{gs} *3		-	2.1	-	
Gate - Drain charge	Q_{gd} *3		-	2.0	-	

●Body diode electrical characteristics (Source-Drain) (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Body diode continuous forward current	I_S	T_a = 25°C	-	-	-0.5	A
Body diode pulse current	I_{SP} *1		-	-	-10	
Forward voltage	V_{SD} *3	V_{GS} = 0V, I_S = -2.5A	-	-	-1.2	V

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●Electrical characteristic curves

Fig.1 Power Dissipation Derating Curve

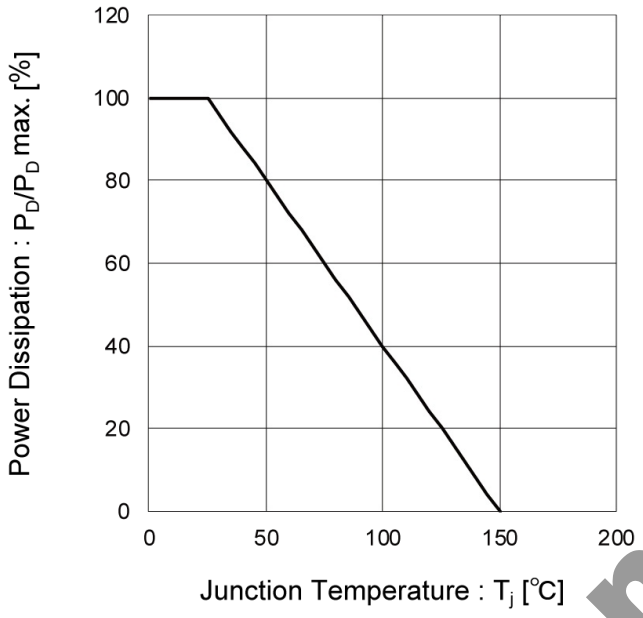


Fig.2 Maximum Safe Operating Area

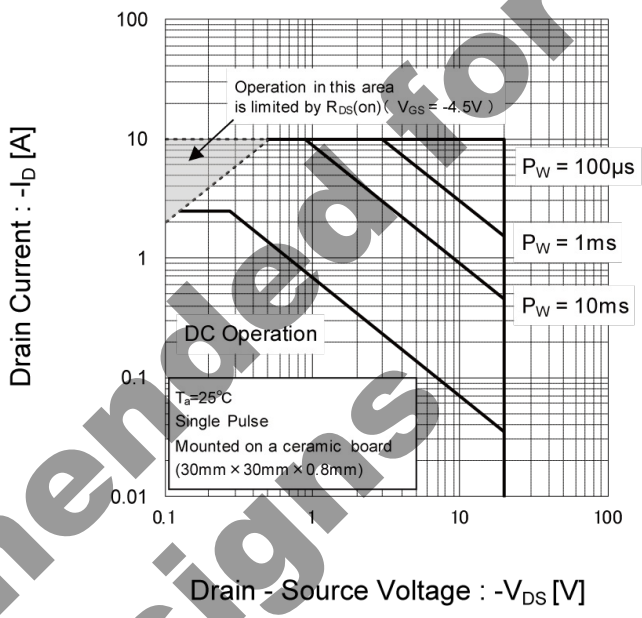


Fig.3 Normalized Transient Thermal Resistance vs. Pulse Width

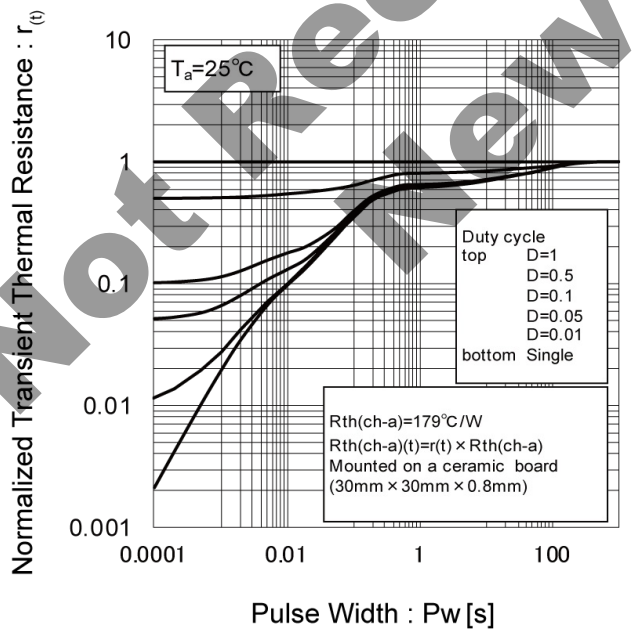
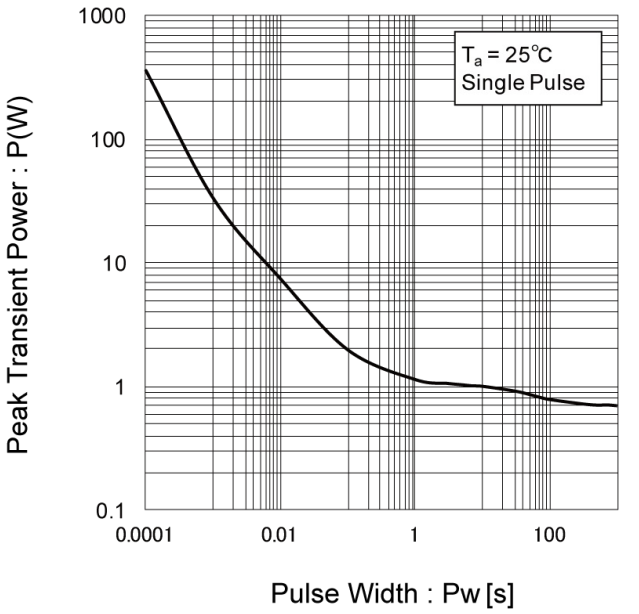


Fig.4 Single Pulse Maximum Power dissipation



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●Electrical characteristic curves

Fig.5 Typical Output Characteristics(I)

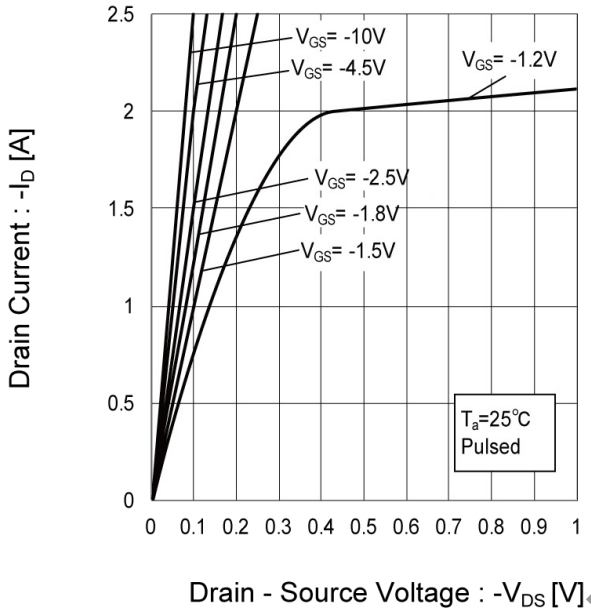


Fig.6 Typical Output Characteristics(II)

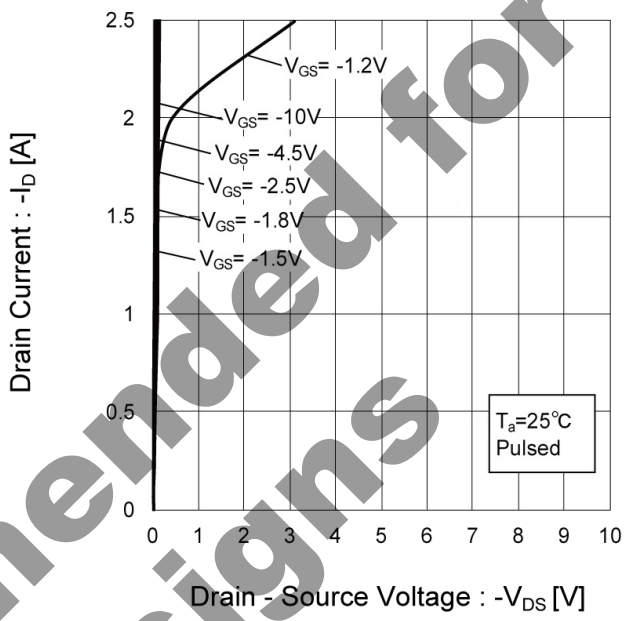


Fig.7 Breakdown Voltage vs. Junction Temperature

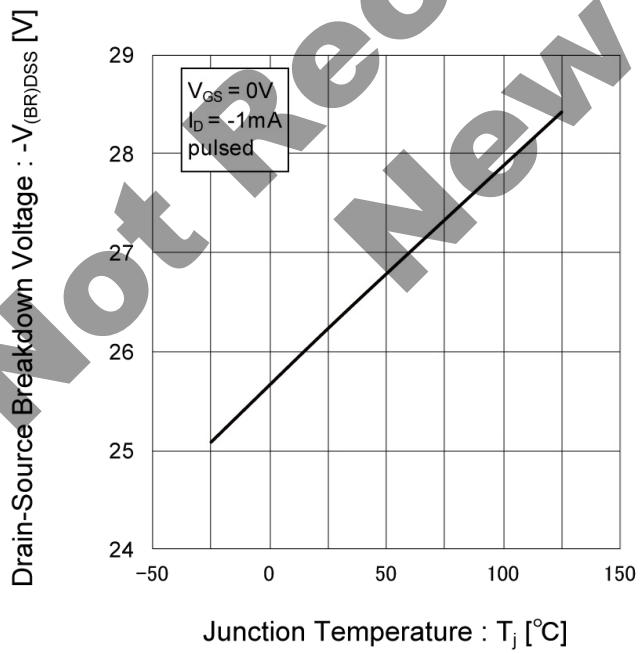
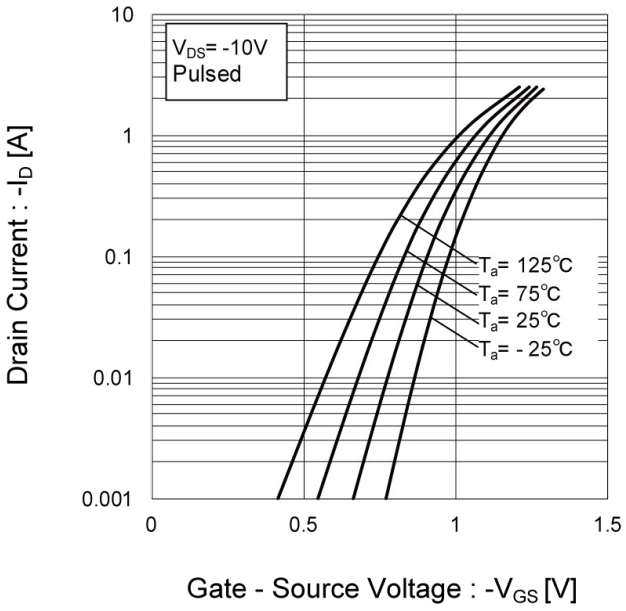


Fig.8 Typical Transfer Characteristics



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●Electrical characteristic curves

Fig.9 Gate Threshold Voltage vs. Junction Temperature

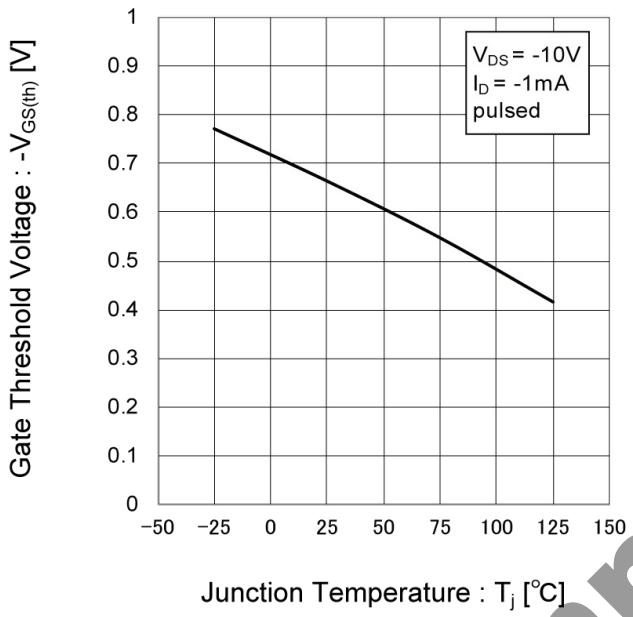


Fig.10 Tranceconductance vs. Drain Current

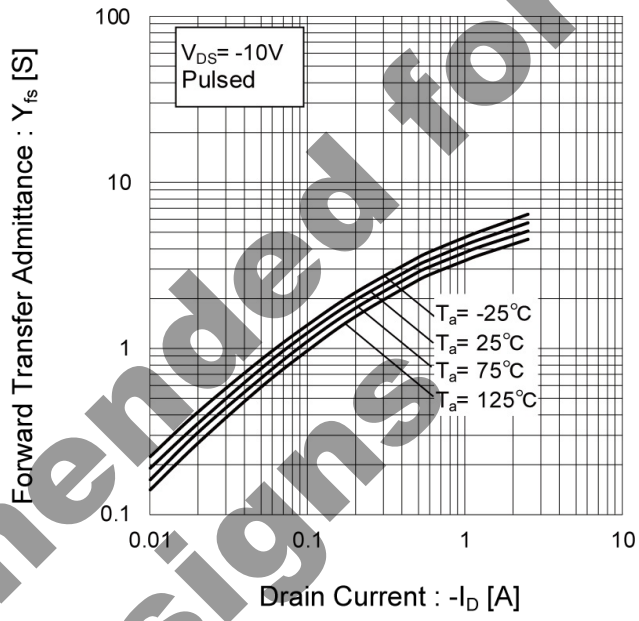


Fig.11 Drain Current Derating Curve

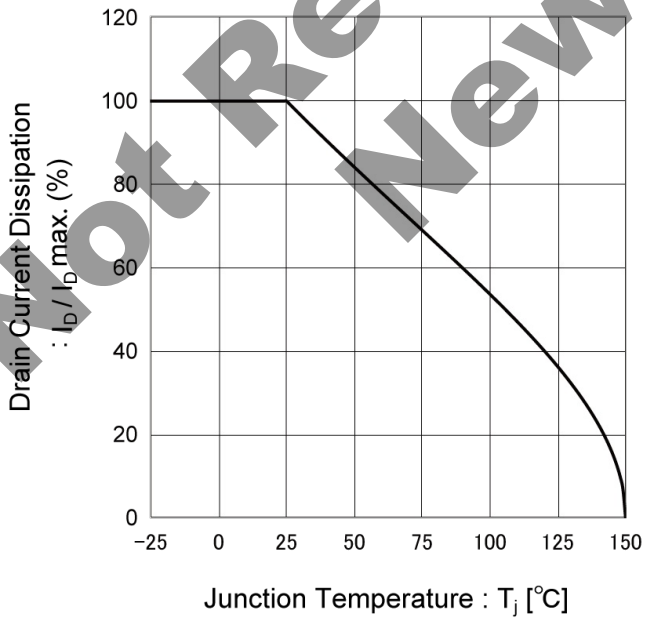
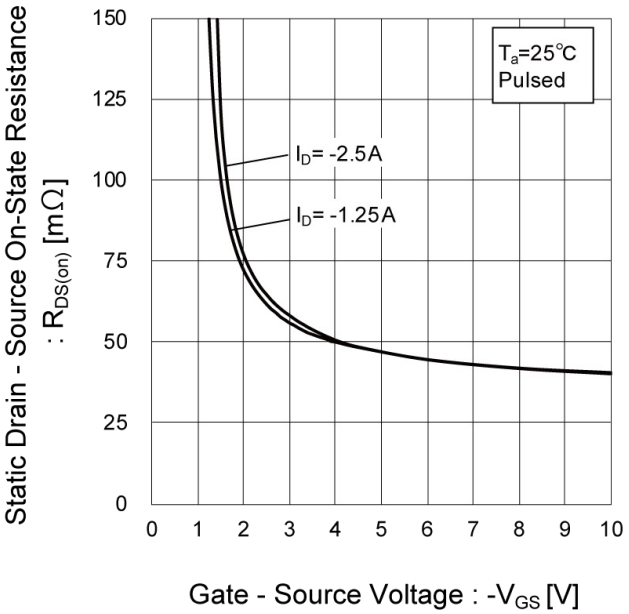


Fig.12 Static Drain - Source On - State Resistance vs. Gate Source Voltage



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●Electrical characteristic curves

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

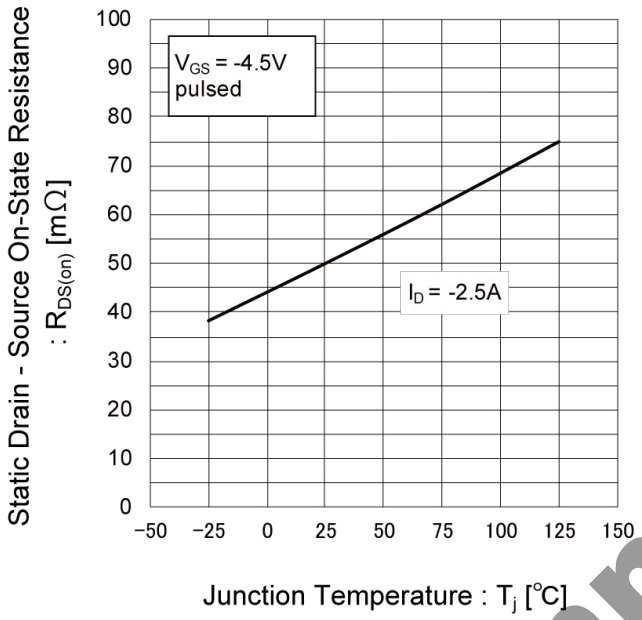


Fig.14 Static Drain - Source On - State Resistance vs. Drain Current(I)

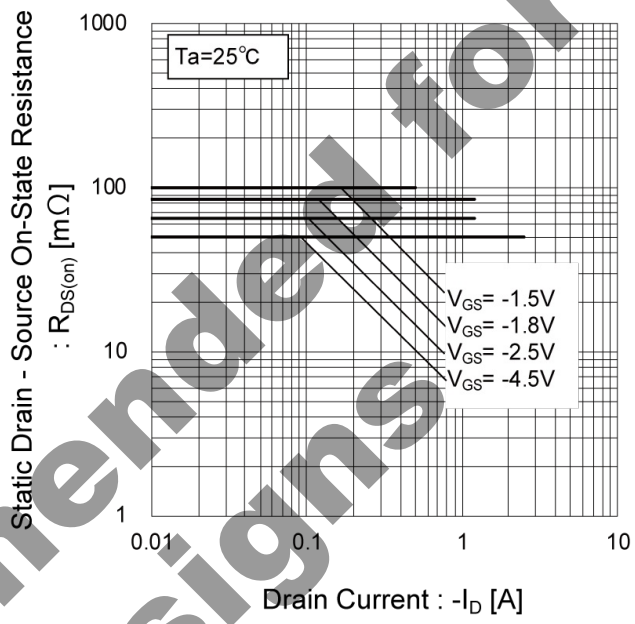


Fig.15 Static Drain - Source On - State Resistance vs. Drain Current(II)

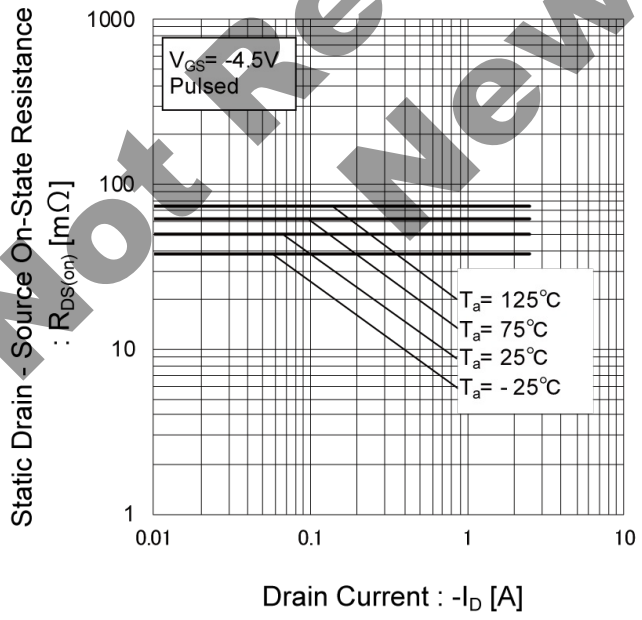
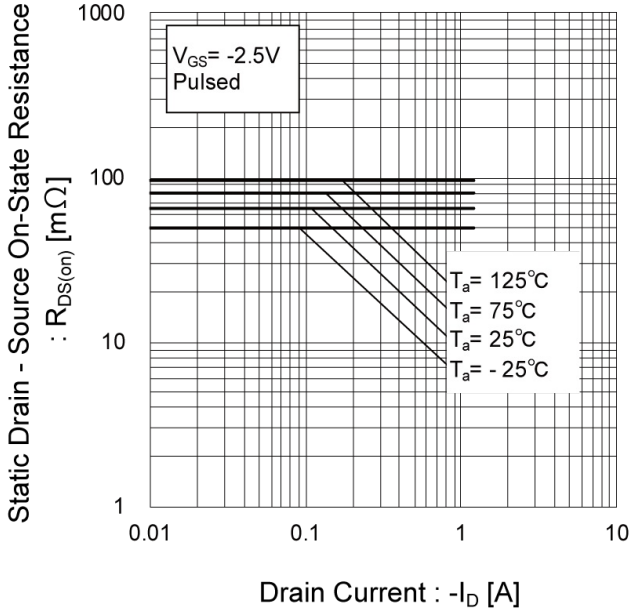


Fig.16 Static Drain - Source On - State Resistance vs. Drain Current(III)



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●Electrical characteristic curves

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

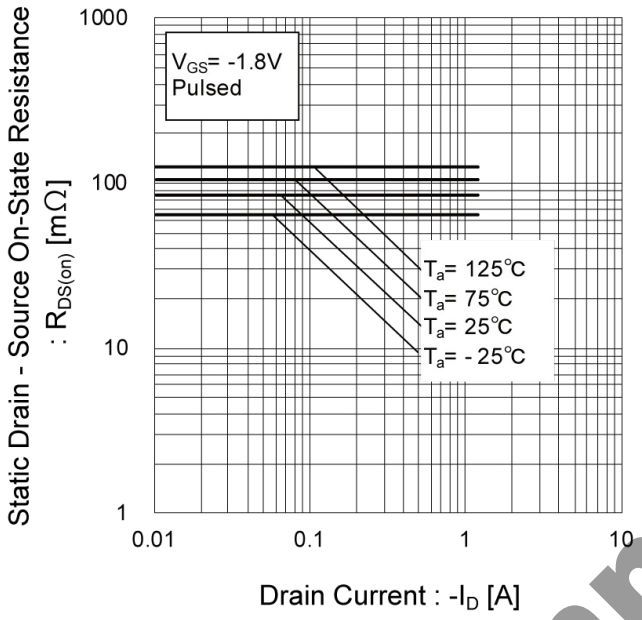


Fig.18 Static Drain - Source On - State Resistance vs. Drain Current(Ⅴ)

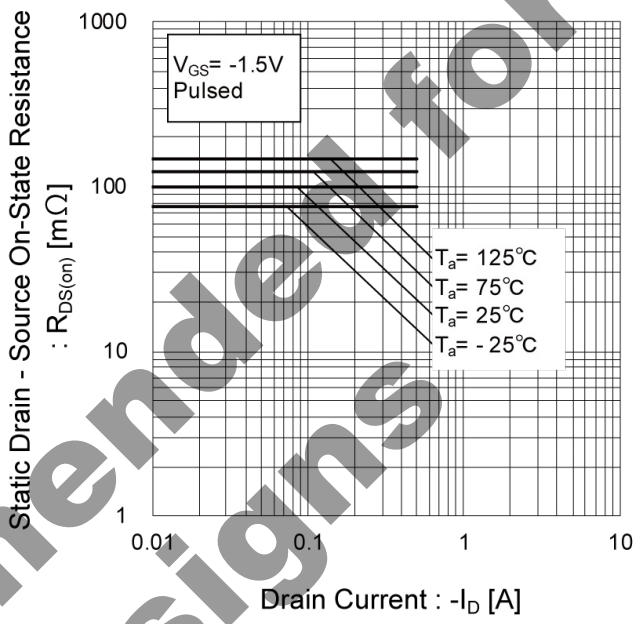


Fig.19 Typical Capacitance vs. Drain - Source Voltage

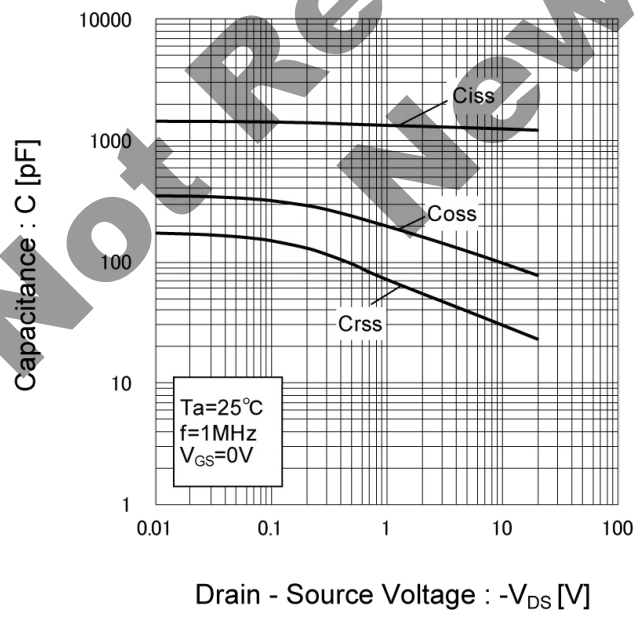
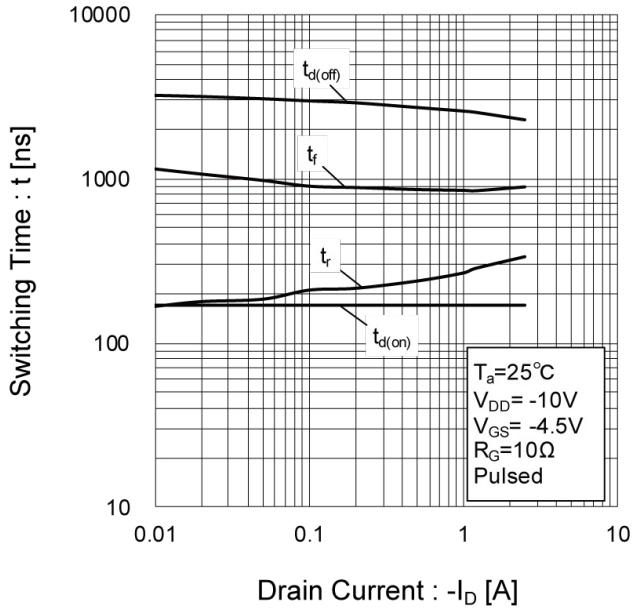


Fig.20 Switching Characteristics



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●Electrical characteristic curves

Fig.21 Dynamic Input Characteristics

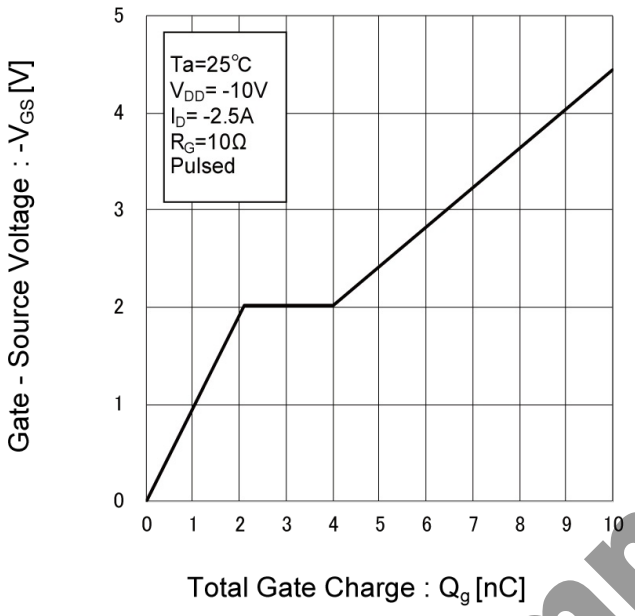
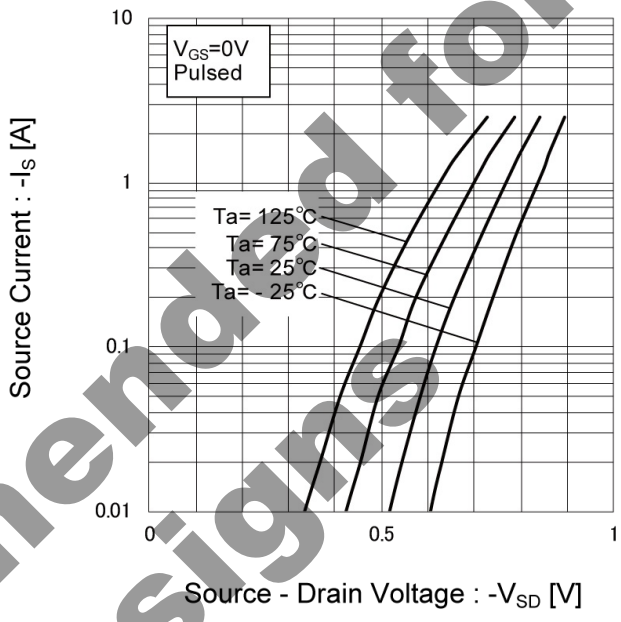


Fig.22 Source Current vs. Source Drain Voltage



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●Measurement circuits

Fig.1-1 Switching Time Measurement Circuit

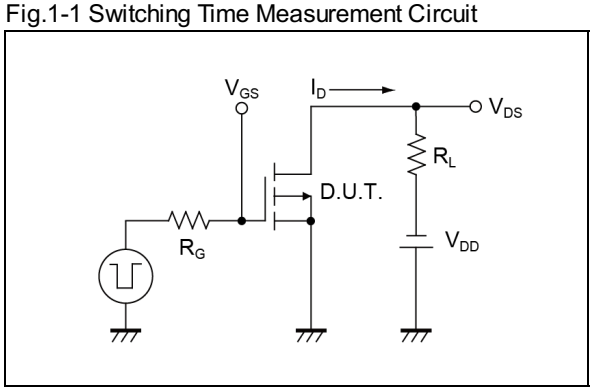


Fig.1-2 Switching Waveforms

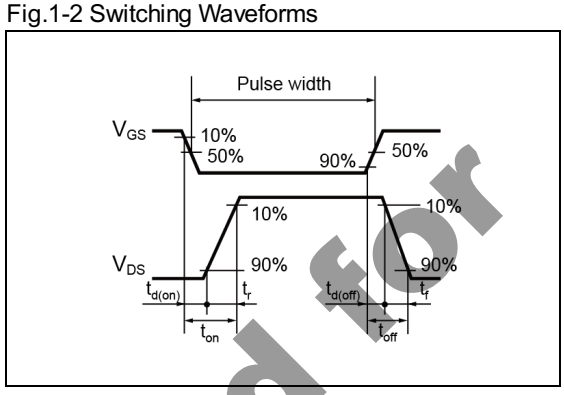


Fig.2-1 Gate Charge Measurement Circuit

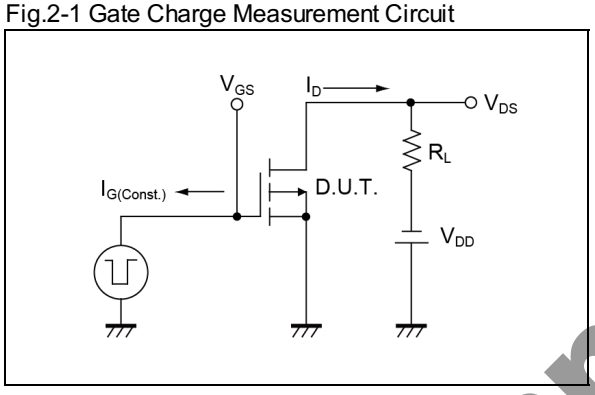
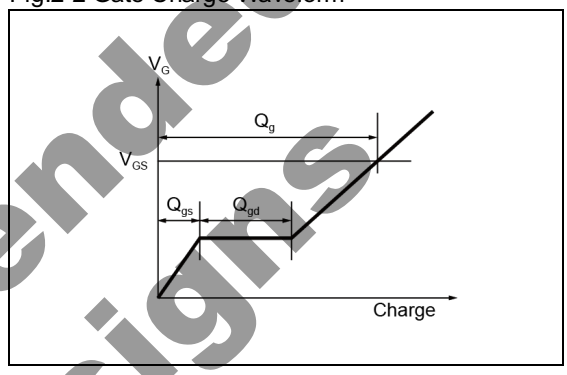


Fig.2-2 Gate Charge Waveform

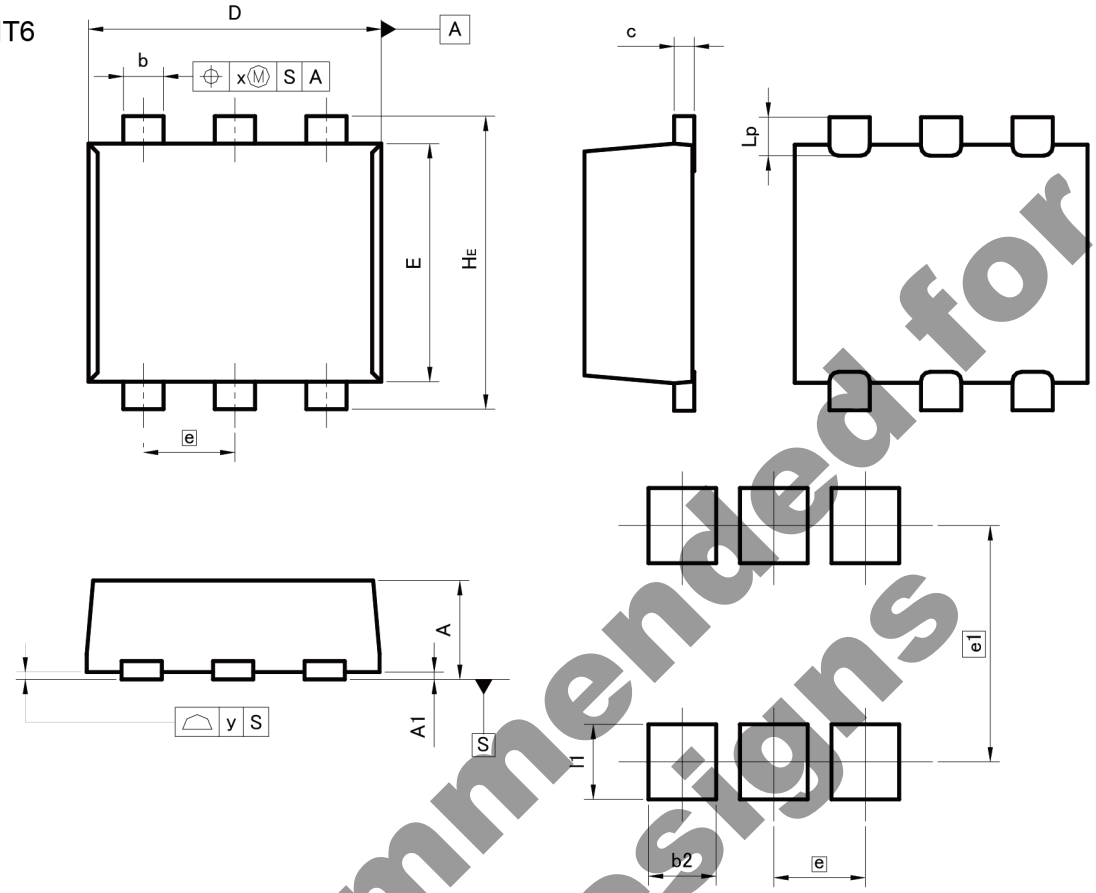


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●Dimensions

WEMT6



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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.55	0.65	0.022	0.026
A1	0.00	0.05	0.000	0.002
b	0.17	0.27	0.007	0.011
c	0.08	0.18	0.003	0.007
D	1.50	1.70	0.059	0.067
E	1.20	1.40	0.047	0.055
e	0.50		0.020	
HE	1.50	1.70	0.059	0.067
Lp	0.11	0.31	0.004	0.012
x	–	0.10	–	0.004
y	–	0.10	–	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	–	0.37	–	0.015
e1	1.29		0.051	
l1	–	0.41	–	0.016

Dimension in mm/inches

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