

**GTT2603****P-CHANNEL ENHANCEMENT MODE POWER MOSFET**

BVDSS	-20V
RDS(ON)	65mΩ
ID	-5.0A

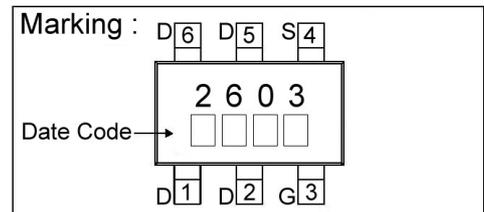
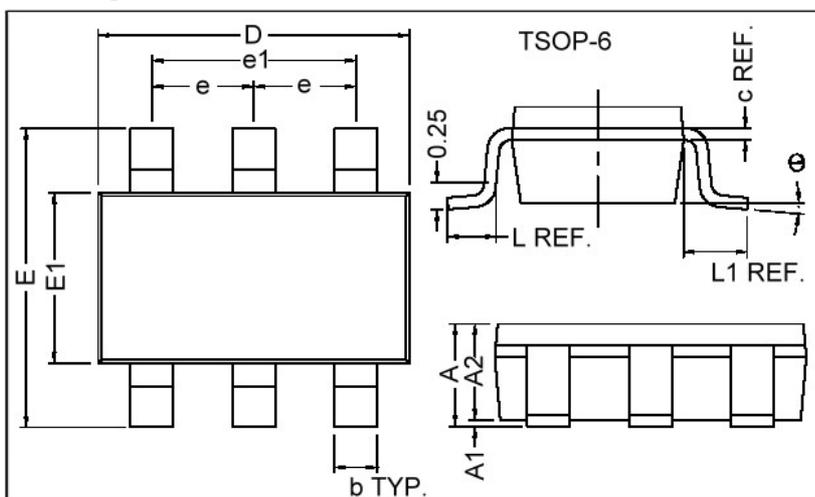
**Description**

The GTT2603 utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device.

The GTT2603 is universally used for all commercial-industrial applications.

**Features**

- \*Simple Drive Requirement
- \*Small Package Outline

**Package Dimensions**

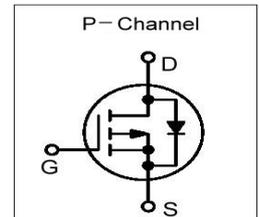
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.10 MAX.		L	0.45 REF.	
A1	0	0.10	L1	0.60 REF.	
A2	0.70	1.00	θ	0°	10°
c	0.12 REF.		b	0.30	0.50
D	2.70	3.10	e	0.95 REF.	
E	2.60	3.00	e1	1.90 REF.	
E1	1.40	1.80			

**Absolute Maximum Ratings**

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	±12	V
Continuous Drain Current <sup>3</sup>	$I_D @ TA=25^{\circ}C$	-5	A
Continuous Drain Current <sup>3</sup>	$I_D @ TA=70^{\circ}C$	-4	A
Pulsed Drain Current <sup>1,2</sup>	$I_{DM}$	-20	A
Power Dissipation	$P_D @ TA=25^{\circ}C$	2	W
Linear Derating Factor		0.016	W/°C
Operating Junction and Storage Temperature Range	$T_j, T_{stg}$	-55 ~ +150	°C

**Thermal Data**

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient <sup>3</sup> Max.	$R_{thj-a}$	62.5	°C/W



**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>	-20	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =-250uA
Breakdown Voltage Temperature Coefficient	ΔBV <sub>DSS</sub> / ΔT <sub>j</sub>	-	-0.1	-	V/°C	Reference to 25°C, I <sub>D</sub> =-1mA
Gate Threshold Voltage	V <sub>GS(th)</sub>	-0.5	-	-1.2	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA
Forward Transconductance	g <sub>fs</sub>	-	9	-	S	V <sub>DS</sub> =-5V, I <sub>D</sub> =-2.8A
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±12V
Drain-Source Leakage Current(T <sub>j</sub> =25°C)	I <sub>DSS</sub>	-	-	-1	uA	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0
Drain-Source Leakage Current(T <sub>j</sub> =55°C)		-	-	-10	uA	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance <sup>2</sup>	R <sub>DS(ON)</sub>	-	-	53	mΩ	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4.5A
		-	-	65		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4.2A
		-	-	120		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2.0A
		-	-	250		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-1.0A
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	-	10.6	16	nC	I <sub>D</sub> =-4.2A V <sub>DS</sub> =-16V V <sub>GS</sub> =-4.5V
Gate-Source Charge	Q <sub>gs</sub>	-	2.32	-		
Gate-Drain ("Miller") Charge	Q <sub>gd</sub>	-	3.68	-		
Turn-on Delay Time <sup>2</sup>	T <sub>d(on)</sub>	-	5.9	-	ns	V <sub>DS</sub> =-15V I <sub>D</sub> =-4.2A V <sub>GS</sub> =-10V R <sub>G</sub> =6Ω R <sub>D</sub> =3.6Ω
Rise Time	T <sub>r</sub>	-	3.6	-		
Turn-off Delay Time	T <sub>d(off)</sub>	-	32.4	-		
Fall Time	T <sub>f</sub>	-	2.6	-		
Input Capacitance	C <sub>iss</sub>	-	740	1200	pF	V <sub>GS</sub> =0V V <sub>DS</sub> =-15V f=1.0MHz
Output Capacitance	C <sub>oss</sub>	-	167	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	126	-		

**Source-Drain Diode**

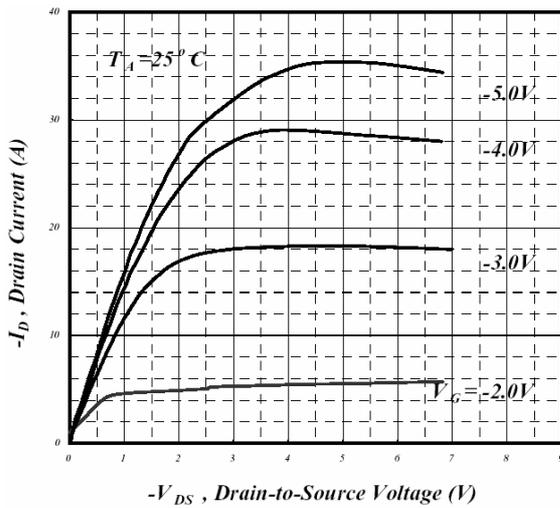
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage <sup>2</sup>	V <sub>SD</sub>	-	-	-1.2	V	I <sub>S</sub> =-1.2A, V <sub>GS</sub> =0V
Reverse Recovery Time <sup>2</sup>	T <sub>rr</sub>	-	27.7	-	ns	I <sub>S</sub> =-4.2A, V <sub>GS</sub> =0V dI/dt=100A/μs
Reverse Recovery Charge	Q <sub>rr</sub>	-	22	-	nC	

Notes: 1. Pulse width limited by Max. junction temperature.

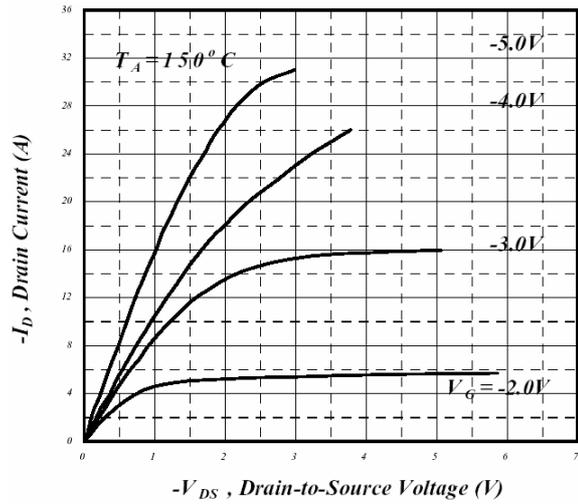
2. Pulse width ≤ 300us, duty cycle ≤ 2%.

3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board; 156°C/W when mounted on Min. copper pad.

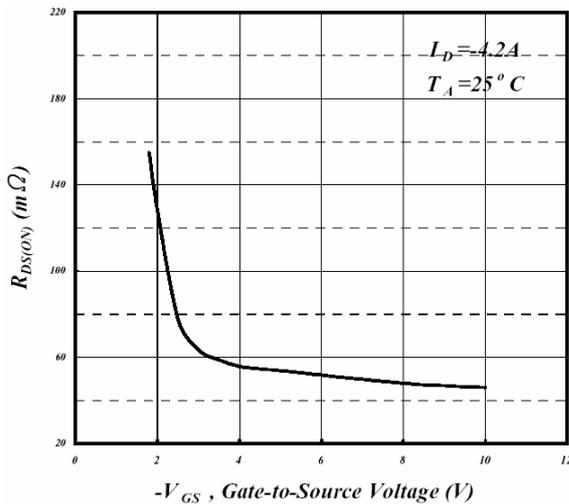
## Characteristics Curve



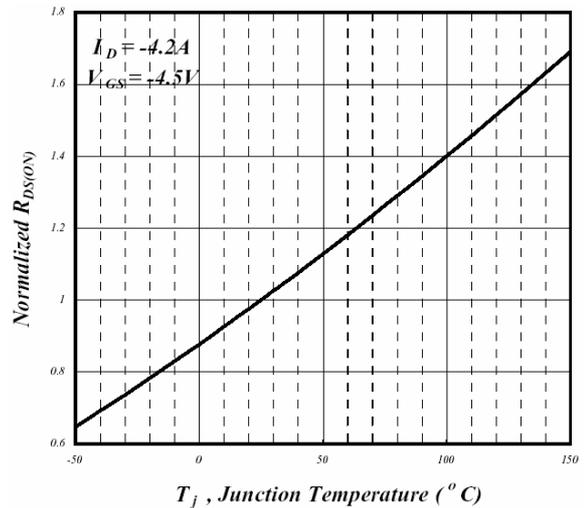
**Fig 1. Typical Output Characteristics**



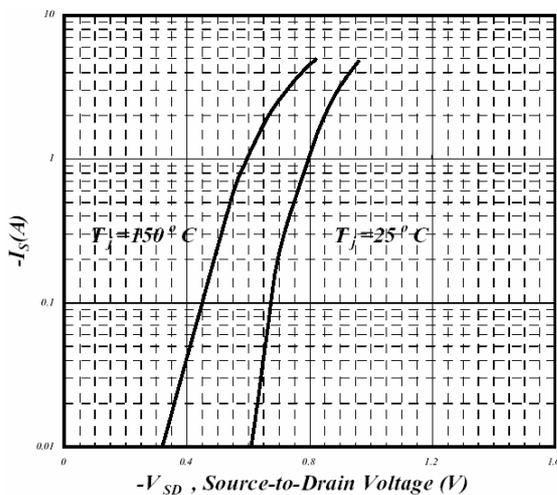
**Fig 2. Typical Output Characteristics**



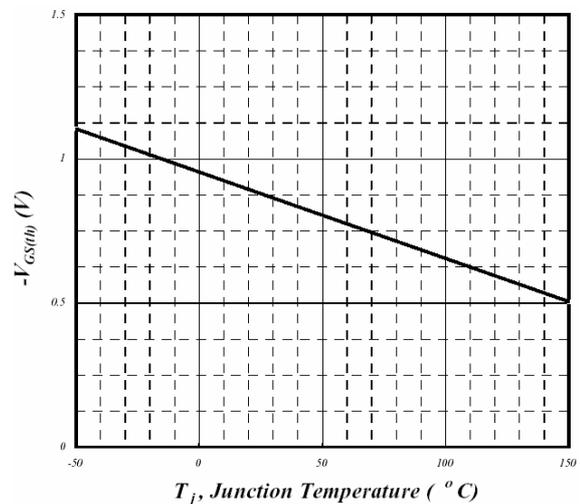
**Fig 3. On-Resistance v.s. Gate Voltage**



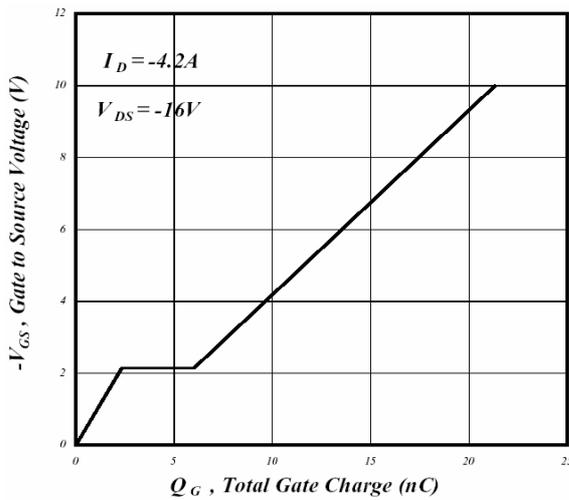
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



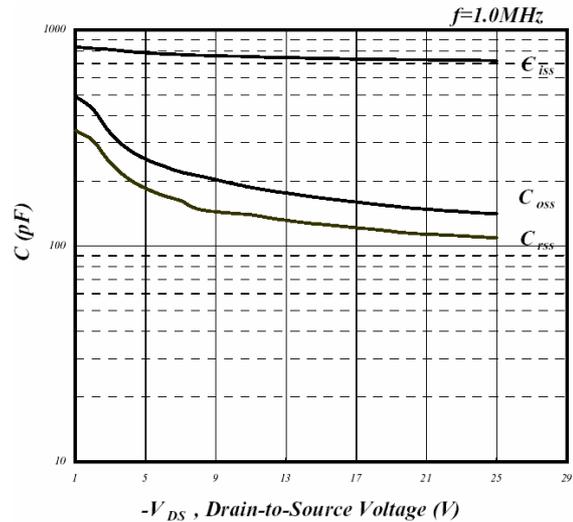
**Fig 5. Forward Characteristics of Reverse Diode**



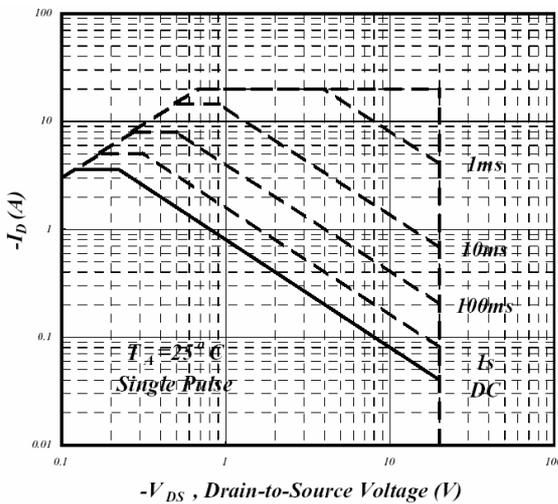
**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**



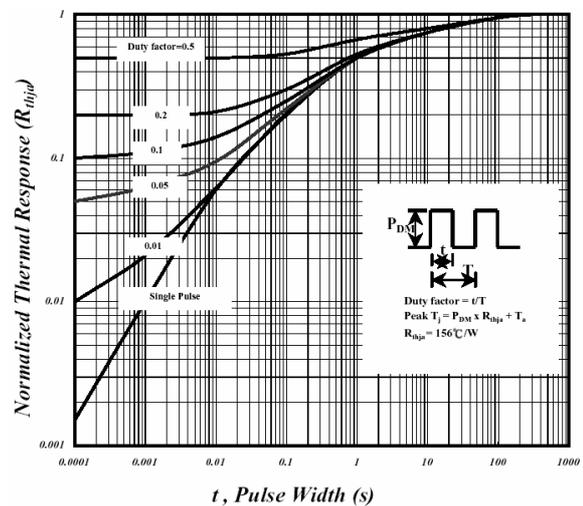
**Fig 7. Gate Charge Characteristics**



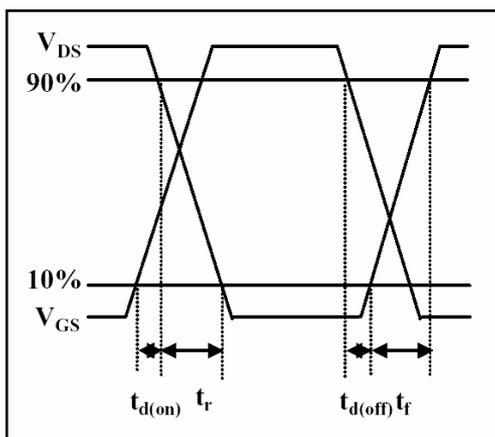
**Fig 8. Typical Capacitance Characteristics**



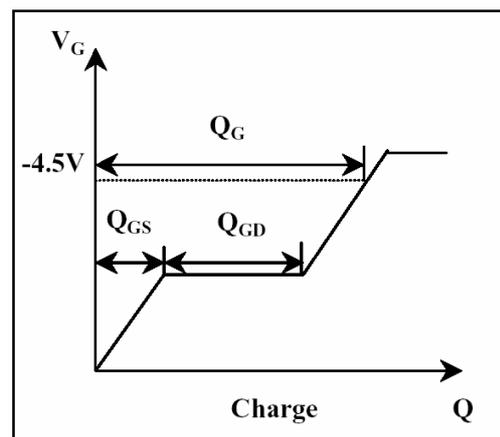
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



**Fig 11. Switching Time Waveform**



**Fig 12. Gate Charge Waveform**

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