

# GT2604

## N-CHANNEL ENHANCEMENT MODE POWER MOSFET

BVDSS	30V
RDS(ON)	45mΩ
ID	5.5A

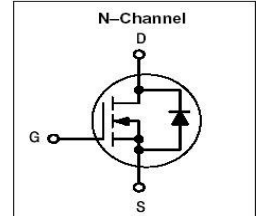
### Description

The GT2604 utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device.

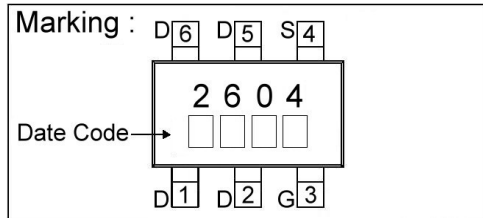
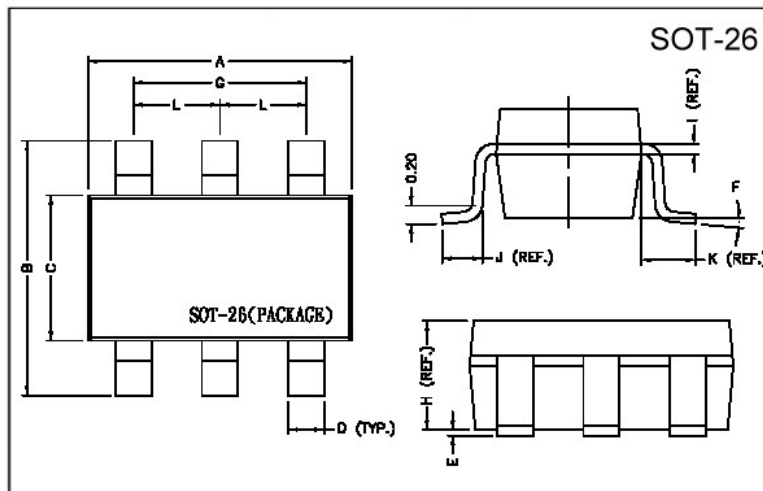
The GT2604 is universally used for all commercial-industrial applications.

### Features

- \*Fast Switching Characteristic
- \*Lower Gate Charge
- \*Small Footprint & Low Profile Package



### Package Dimensions



REF.	Millimeter		REF.	Dimensions
	Min.	Max.		Millimeter
A	2.70	3.10	G	1.90 REF.
B	2.60	3.00	H	1.20 REF.
C	1.40	1.80	I	0.12 REF.
D	0.30	0.55	J	0.37 REF.
E	0	0.10	K	0.60 REF.
F	0°	10°	L	0.95 REF.

### Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>3</sup> , $V_{GS}@4.5V$	$I_D @TA=25^\circ C$	5.5	A
Continuous Drain Current <sup>3</sup> , $V_{GS}@4.5V$	$I_D @TA=70^\circ C$	4.4	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	Ratings	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>	30	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =250uA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	0.02	-	V/°C	Reference to 25°C, I <sub>D</sub> =1mA
Gate Threshold Voltage	V <sub>GS(th)</sub>	1.0	-	3.0	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA
Forward Transconductance	g <sub>fs</sub>	-	7	-	S	V <sub>DS</sub> =10V, I <sub>D</sub> =4.8A
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±20V
Drain-Source Leakage Current(T <sub>j</sub> =25°C)	I <sub>DSS</sub>	-	-	1	uA	V <sub>DS</sub> =30V, V <sub>GS</sub> =0
Drain-Source Leakage Current(T <sub>j</sub> =70°C)		-	-	25	uA	V <sub>DS</sub> =24V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance <sup>2</sup>	R <sub>DS(ON)</sub>	-	-	45	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> =4.8A
		-	-	65		V <sub>GS</sub> =4.5V, I <sub>D</sub> =2.4A
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	-	6	10	nC	I <sub>D</sub> =4.8A V <sub>DS</sub> =24V V <sub>GS</sub> =4.5V
Gate-Source Charge	Q <sub>gs</sub>	-	2	-		
Gate-Drain ("Miller") Charge	Q <sub>gd</sub>	-	3	-		
Turn-on Delay Time <sup>2</sup>	T <sub>d(on)</sub>	-	6	-	ns	V <sub>DS</sub> =15V I <sub>D</sub> =1A V <sub>GS</sub> =10V R <sub>G</sub> =3.3Ω R <sub>D</sub> =15Ω
Rise Time	T <sub>r</sub>	-	8	-		
Turn-off Delay Time	T <sub>d(off)</sub>	-	15	-		
Fall Time	T <sub>f</sub>	-	4	-		
Input Capacitance	C <sub>iss</sub>	-	440	705	pF	V <sub>GS</sub> =0V V <sub>DS</sub> =25V f=1.0MHz
Output Capacitance	C <sub>oss</sub>	-	105	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	35	-		

**Source-Drain Diode**

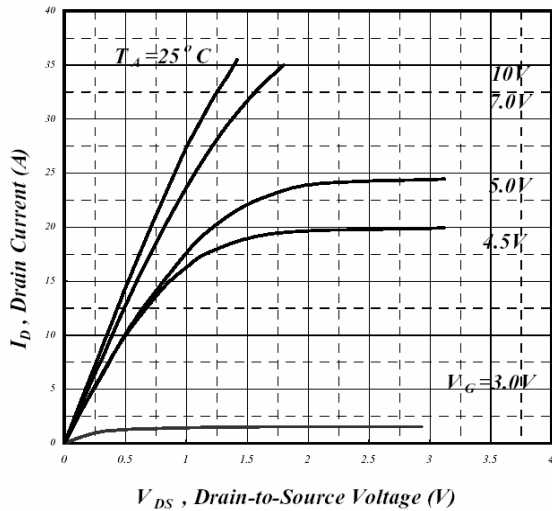
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage <sup>2</sup>	V <sub>SD</sub>	-	-	1.2	V	I <sub>S</sub> =4.8A, V <sub>GS</sub> =0V
Reverse Recovery Time <sup>2</sup>	T <sub>rr</sub>	-	15	-	ns	I <sub>S</sub> =4.8A, V <sub>GS</sub> =0V di/dt=100A/μs
Reverse Recovery Charge	Q <sub>rr</sub>	-	7	-	nC	

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

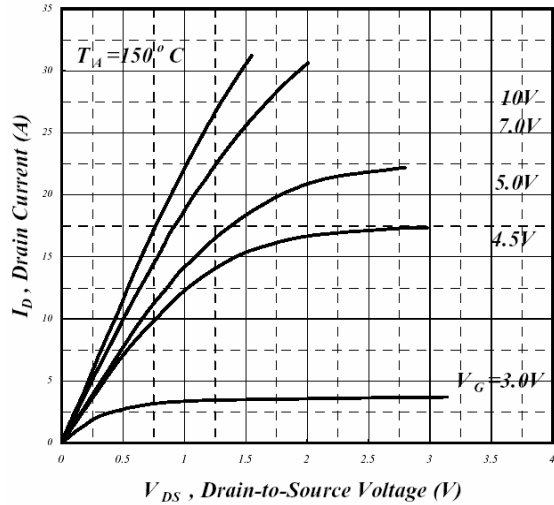
2. Pulse width ≤ 300us, duty cycle ≤ 2%.

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

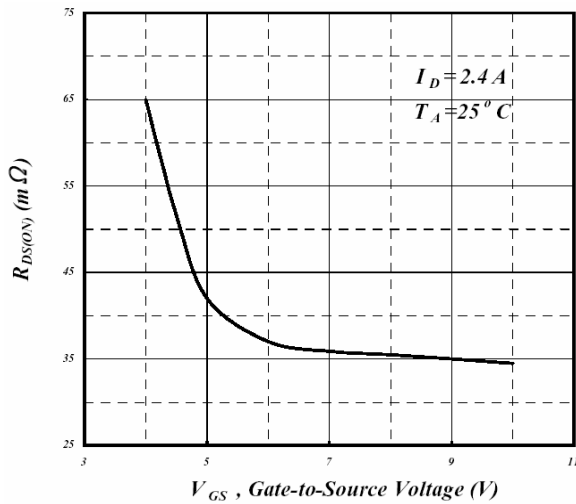
## Characteristics Curve



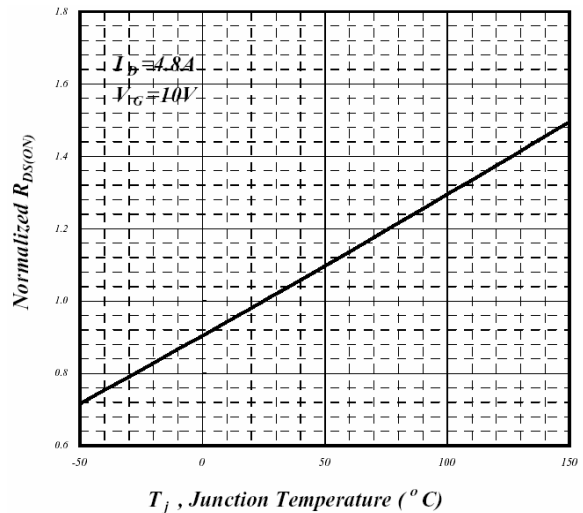
**Fig 1. Typical Output Characteristics**



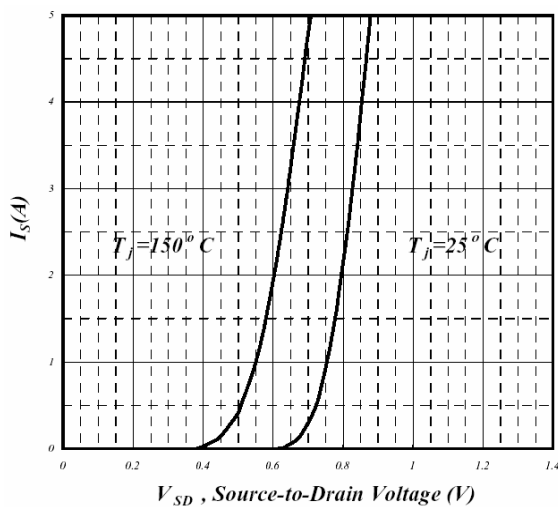
**Fig 2. Typical Output Characteristics**



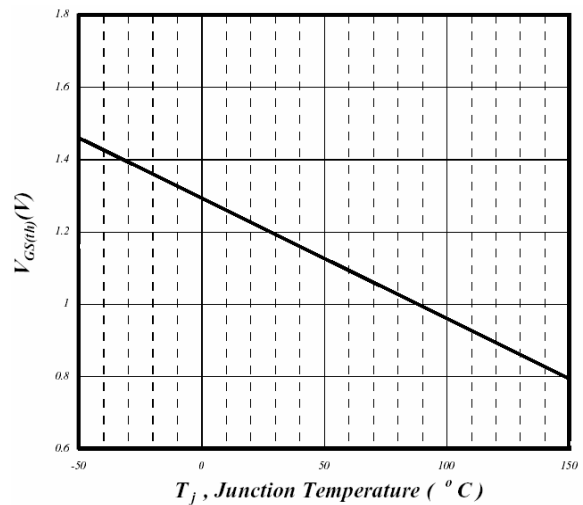
**Fig 3. On-Resistance v.s. Gate Voltage**



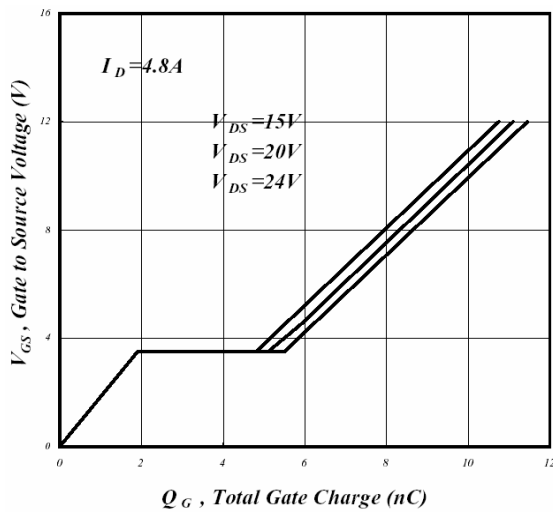
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



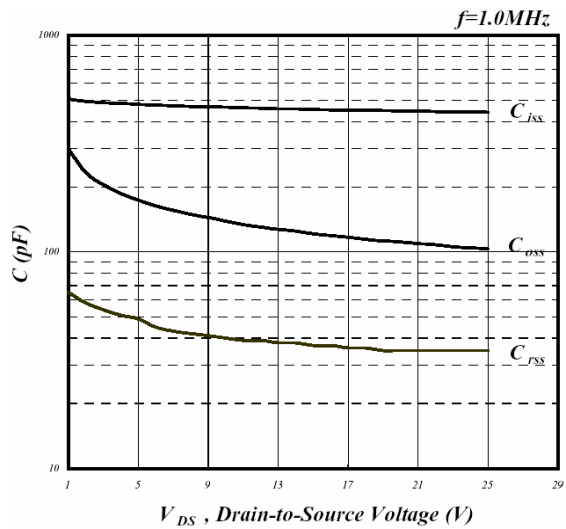
**Fig 5. Forward Characteristics of Reverse Diode**



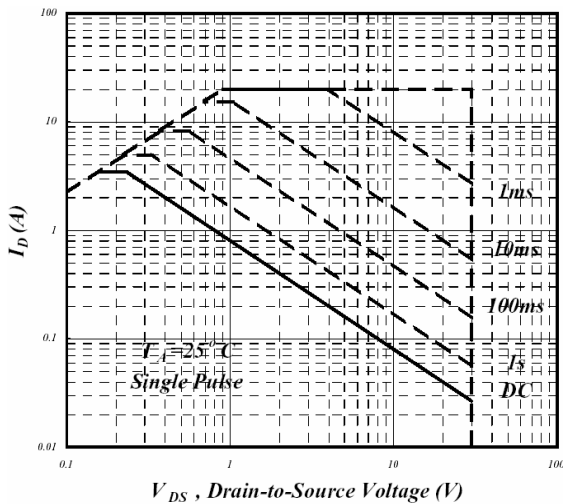
**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**



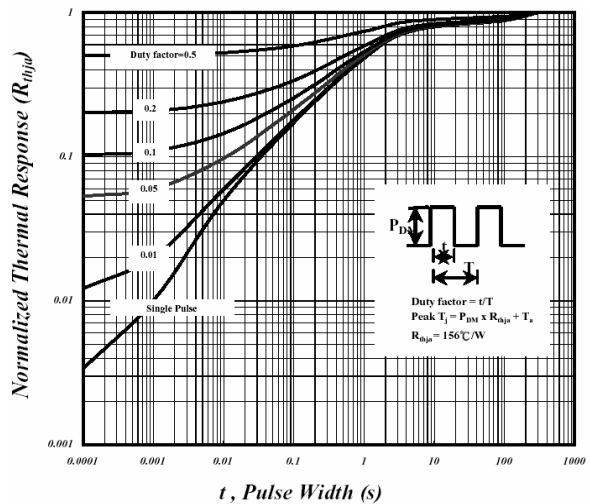
**Fig 7. Gate Charge Characteristics**



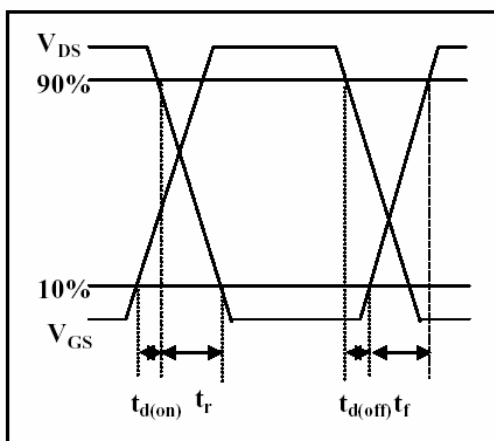
**Fig 8. Typical Capacitance Characteristics**



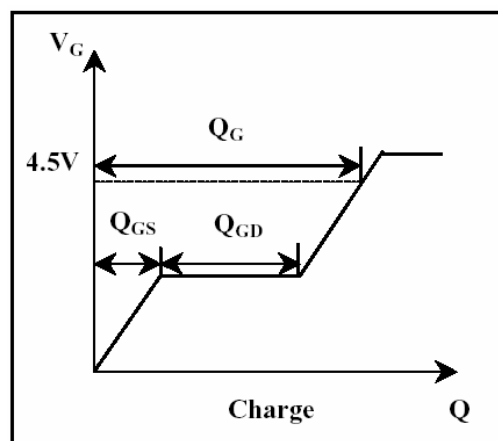
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



**Fig 11. Switching Time Waveform**



**Fig 12. Gate Charge Waveform**

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