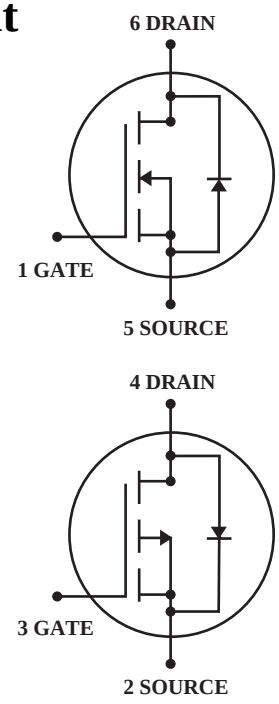
WEITRON

WTV3585

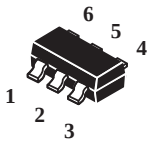
N AND P-Channel Enhancement Mode POWER MOSFET

Lead(Pb)-Free



N-CHANNEL
DRAIN SOURCE VOLTAGE
20 VOLTAGE
DRAIN CURRENT
3.5 AMPERES

P-CHANNEL
DRAIN SOURCE VOLTAGE
-20 VOLTAGE
DRAIN CURRENT
-2.5 AMPERES



TSOP-6

Features:

* Low Gate change
* Low On-Resistance
  N-CH $R_{DS(ON)}$<75mΩ@V_{GS} = 4.5V
  P-CH $R_{DS(ON)}$<160mΩ@V_{GS} = -4.5V
* SOT-8 Package

Maximum Ratings (T_A=25˚C Unless Otherwise Specified)

Rating	Symbol	Value		Unit
		N-Channl	P-Channl	
Drain-Source Voltage	V_{DS}	20	-20	V
Gate-Source Voltage	V_{GS}	±12	±12	V
Continuous Drain Current[3] T_A=25˚C T_A=75˚C	I_D	3.5 2.8	-2.5 -1.97	A
Pulsed Drain Current[1]	I_{DM}	10	-10	A
Total Power Dissipation T_A=25˚C	P_D	1.14		W
Maximum Junction-ambient[3]	$R_{\theta JA}$	110		˚C/W
Operating Junction Temperature Range	T_J	+150		˚C
Storage Temperature Range	T_{stg}	-55~+150		˚C

Device Marking

WTV3585=3585

N-Channel Electrical Characteristics (T_A = 25°C Unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF Characteristics					
Drain-Source Breakdown Voltage V_{GS}=0,I_D=250μA	BV_{DSS}	20	-	-	V
Drain-Source Leakage Current Tj=25°C, V_{DS}=20V, V_{GS}=0V Tj=70°C, V_{DS}=16V, V_{GS}=0V	I_{DSS}	- -	- -	1 10	μA
Gate-Source Leakage current V_{GS}=±12V	I_{GSS}	-	-	±100	nA
ON Characteristics					
Gate-Source Threshold Voltage V_{DS}=V_{GS}, I_D=250μA	$V_{GS(Th)}$	0.5	-	1.2	V
Drain-Source On-Resistance V_{GS}=4.5V,I_D=3.5A V_{GS}=2.5V,I_D=1.2A	$R_{DS(on)}$	- -	- -	75 125	mΩ
Forward Transconductance V_{DS}=5V,I_D=3A	g_{fs}	-	7	-	S
Dymamic Characteristics					
Input Capacitance V_{GS}=0V, V_{DS}=20V, f=1.0MHz	C_{iss}	-	230	370	pF
Output Capacitance V_{GS}=0V, V_{DS}=20V, f=1.0MHz	C_{oss}	-	55	-	
Reverse Transfer Capacitance V_{GS}=0V, V_{DS}=20V, f=1.0MHz	C_{rss}	-	40	-	
Gate Resistance f=1.0MHz	R_g	-	1.1	1.7	Ω
Switching Characteristics					
Turn-on Delay Time V_{DS}=15V, V_{GS}=5V, I_D=1A, R_G=3.3Ω, R_D=15Ω	$t_{d(on)}$	-	6	-	ns
Rise Time V_{DS}=15V, V_{GS}=5V, I_D=1A, R_G=3.3Ω, R_D=15Ω	t_r	-	8	-	
Turn-off Delay Time V_{DS}=15V, V_{GS}=5V, I_D=1A, R_G=3.3Ω, R_D=15Ω	$t_{d(off)}$	-	10	-	
Fall Time V_{DS}=15V, V_{GS}=5V, I_D=1A, R_G=3.3Ω, R_D=15Ω	t_f	-	3	-	
Total Gate Charge V_{DS}=16V,V_{GS}=4.5V,I_D=3A	Q_g	-	4	7	nC
Gate-Source Charge V_{DS}=16V,V_{GS}=4.5V,I_D=3A	Q_{gs}	-	0.7	-	
Gate-Source Change V_{DS}=16V,V_{GS}=4.5V,I_D=3A	Q_{gd}	-	2	-	
Source-Drain Diode Characteristics					
Forward On Voltage I_S=1.2A, V_{GS}=0V	V_{SD}	-	-	1.2	V
Reverse Recovery Time I_S=3A, V_{GS}=0V, dI/dt=100A/μs	T_{rr}	-	16	-	nS
Reverse Recovery Charge I_S=3A, V_{GS}=0V, dI/dt=100A/μs	Q_{rr}	-	8	-	nC

Note: 1. Pulse width limited by Max. junction temperature.
2. Pulse width ≤ 300us, duty cycle ≤ 2%.
3. Surface mounted on 1 in^2 copper pad of FR4 board, t≤5sec; 180°C/W when mounted on Min. copper pad.

P-Channel Electrical Characteristics (T_A = 25°C Unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF Characteristics					
Drain-Source Breakdown Voltage V_{GS}=0,I_D=-250μA	BV_{DSS}	-20	-	-	V
Drain-Source Leakage Current Tj=25°C, V_{DS}=-20V, V_{GS}=0V Tj=70°C, V_{DS}=-16V, V_{GS}=0V	I_{DSS}	- -	- -	-1 -25	μA
Gate-Source Leakage current V_{GS}=±12V	I_{GSS}	-	-	±100	nA
ON Characteristics					
Gate-Source Threshold Voltage V_{DS}=V_{GS}, I_D=-250μA	$V_{GS(Th)}$	-	-	-1.2	V
Drain-Source On-Resistance[2] V_{GS}=-10V, I_D=-2.8A V_{GS}=-4.5V, I_D=-2.5A V_{GS}=-2.5V, I_D=-2A	$R_{DS(on)}$	- - -	- - -	120 160 300	mΩ
Forward Transconductance V_{DS}=-5V,I_D=-2A	g_{fs}	-	4.0	-	S
Dymamic Characteristics					
Input Capacitance V_{GS}=0V, V_{DS}=-20V, f=1.0MHz	C_{iss}	-	270	430	pF
Output Capacitance V_{GS}=0V, V_{DS}=-20V, f=1.0MHz	C_{oss}	-	70	-	
Reverse Transfer Capacitance V_{GS}=0V, V_{DS}=-20V, f=1.0MHz	C_{rss}	-	55	-	
Switching Characteristics					
Turn-on Delay Time V_{DS}=-10V, V_{GS}=-10V, I_D=-1A, R_G=3.3Ω, R_D=10Ω	$t_{d(on)}$	-	6	-	ns
Rise Time V_{DS}=-10V, V_{GS}=-10V, I_D=-1A, R_G=3.3Ω, R_D=10Ω	t_r	-	17	-	
Turn-off Delay Time V_{DS}=-10V, V_{GS}=-10V, I_D=-1A, R_G=3.3Ω, R_D=10Ω	$t_{d(off)}$	-	16	-	
Fall Time V_{DS}=-10V, V_{GS}=-10V, I_D=-1A, R_G=3.3Ω, R_D=10Ω	t_f	-	5	-	
Total Gate Charge[2] V_{DS}=-16V, V_{GS}=-4.5V, I_D=-2A	Q_g	-	5	8	nC
Gate-Source Charge V_{DS}=-16V, V_{GS}=-4.5V, I_D=-2A	Q_{gs}	-	1	-	
Gate-Source Change V_{DS}=-16V, V_{GS}=-4.5V, I_D=-2A	Q_{gd}	-	2	-	
Source-Drain Diode Characteristics					
Forward On Voltage[2] I_S=-1.2A, V_{GS}=0V	V_{SD}	-	-	-1.2	V
Reverse Recovery Time[2] I_S=-2A, V_{GS}=0V, dI/dt=100A/μs	T_{rr}	-	20	-	nS
Reverse Recovery Charge I_S=-2A, V_{GS}=0V, dI/dt=100A/μs	Q_{rr}	-	15	-	nC

Note: 1. Pulse width limited by Max. junction temperature.
2. Pulse width ≤ 300us, duty cycle ≤ 2%.
3. Surface mounted on 1 in² copper pad of FR4 board, t≤5sec; 180°C/W when mounted on Min. copper pad.

Characteristics Curve N-Channel

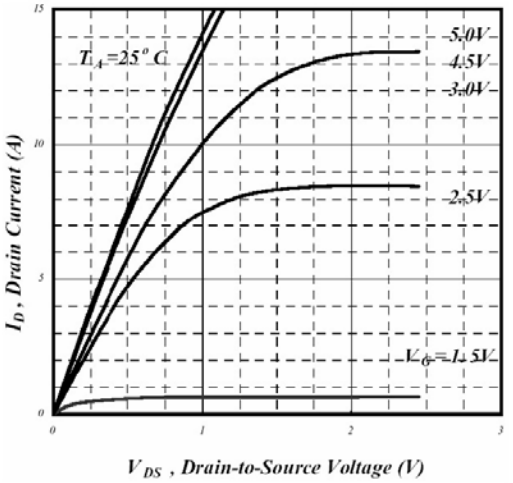


Fig 1. Typical Output Characteristics

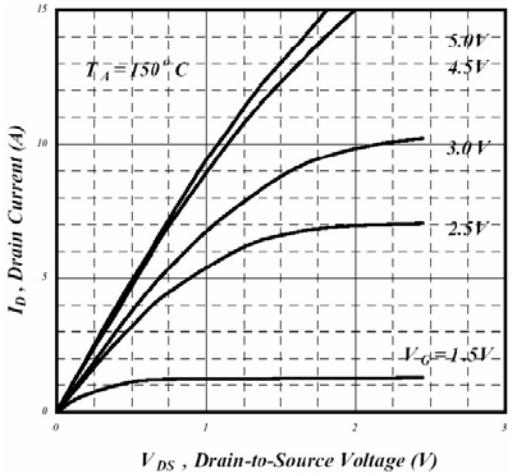


Fig 2. Typical Output Characteristics

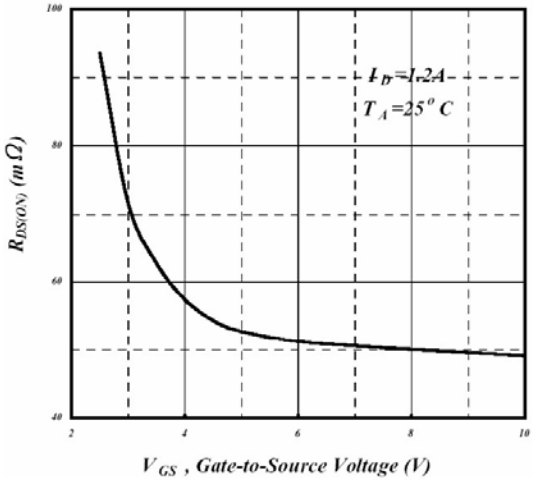


Fig 3. On-Resistance v.s. Gate Voltage

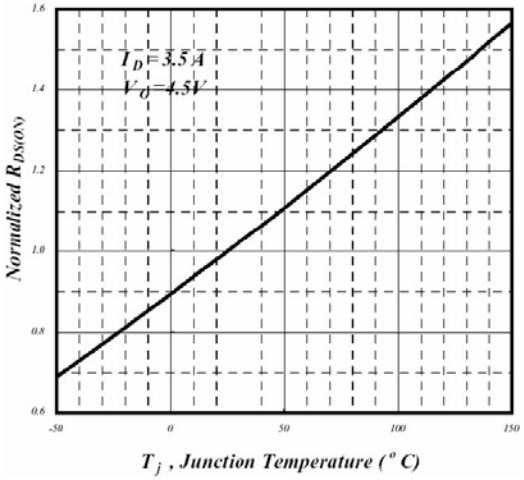


Fig 4. Normalized On-Resistance v.s. Junction Temperature

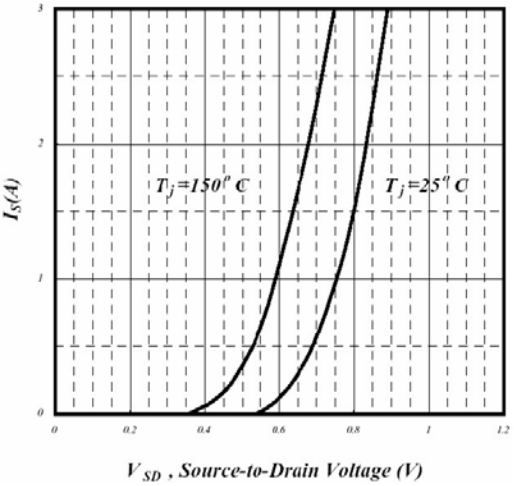


Fig 5. Forward Characteristics of Reverse Diode

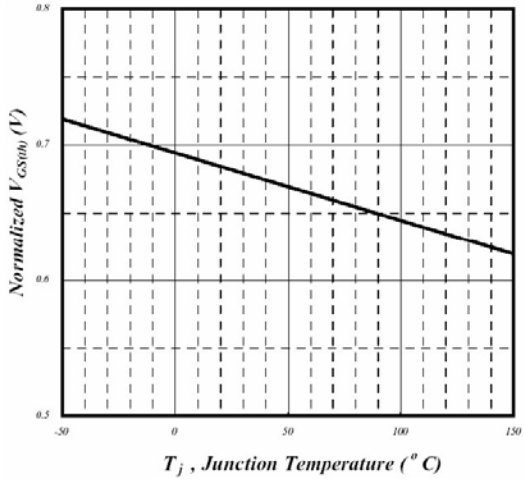


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

N-Channel

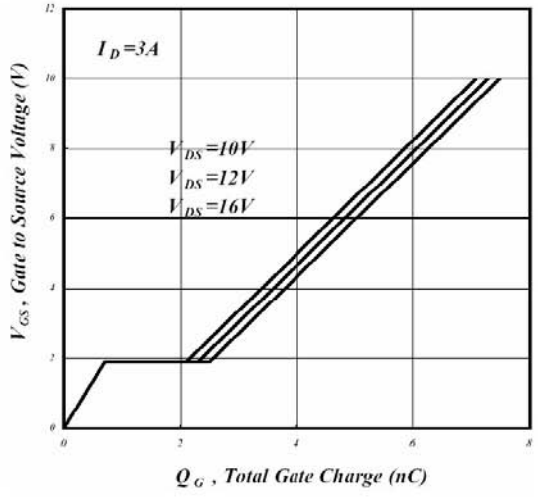


Fig 7. Gate Charge Characteristics

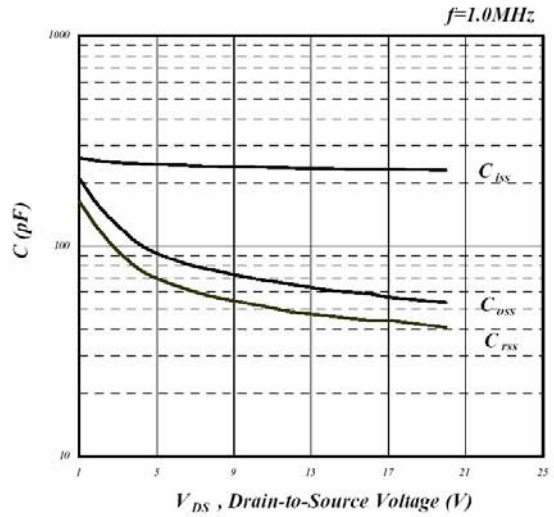


Fig 8. Typical Capacitance Characteristics

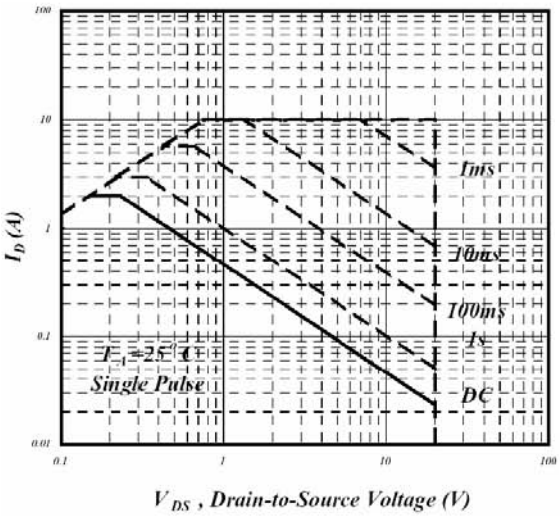


Fig 9. Maximum Safe Operating Area

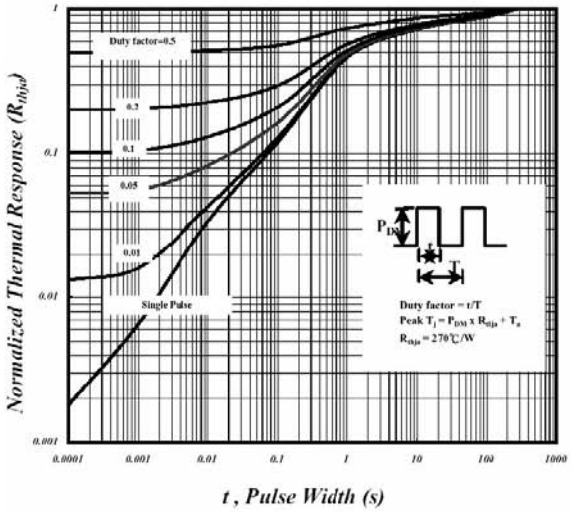


Fig 10. Effective Transient Thermal Impedance

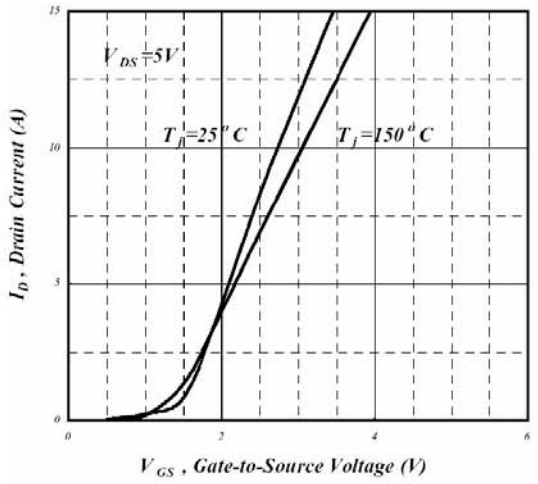


Fig 11. Transfer Characteristics

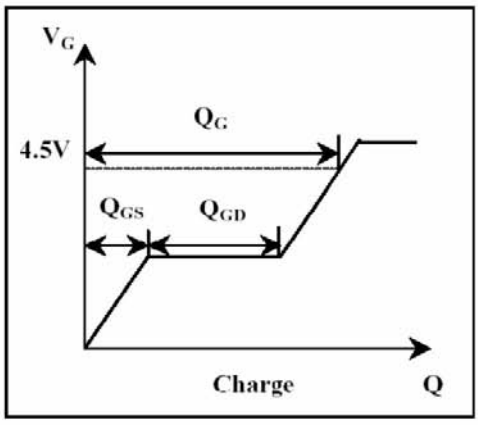


Fig 12. Gate Charge Waveform

Characteristics Curve P-Channel

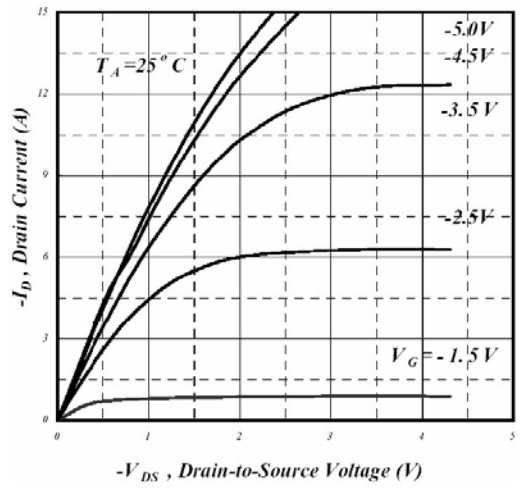


Fig 1. Typical Output Characteristics

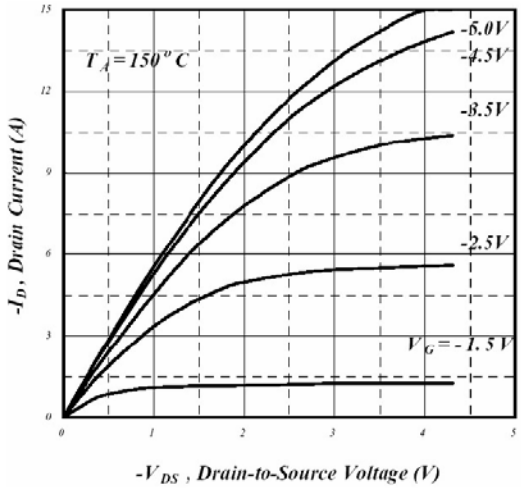


Fig 2. Typical Output Characteristics

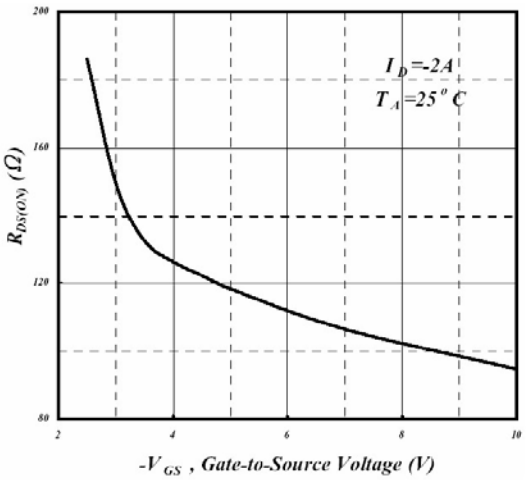


Fig 3. On-Resistance v.s. Gate Voltage

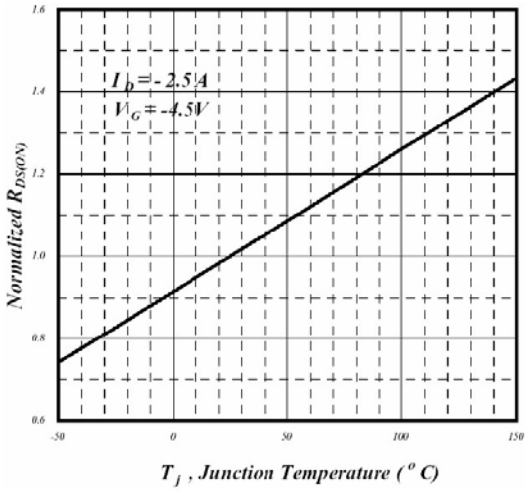


Fig 4. Normalized On-Resistance v.s. Junction Temperature

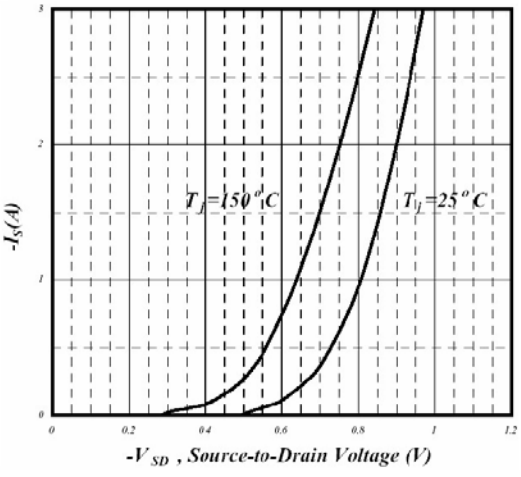


Fig 5. Forward Characteristics of Reverse Diode

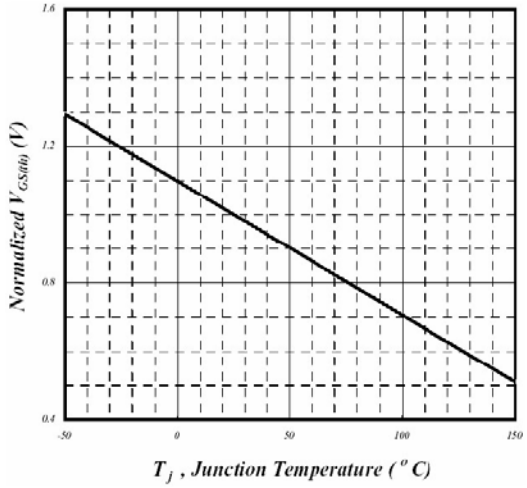


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

P-Channel

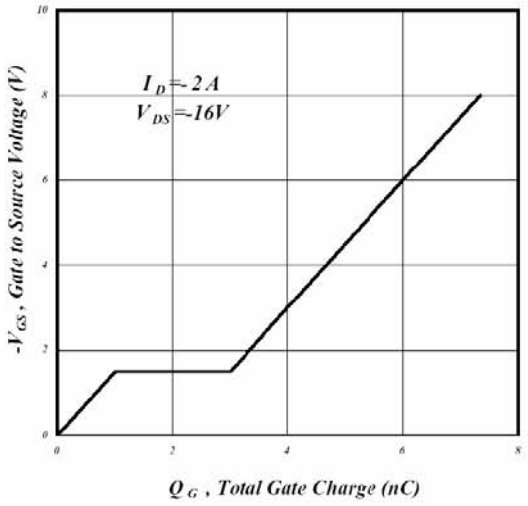
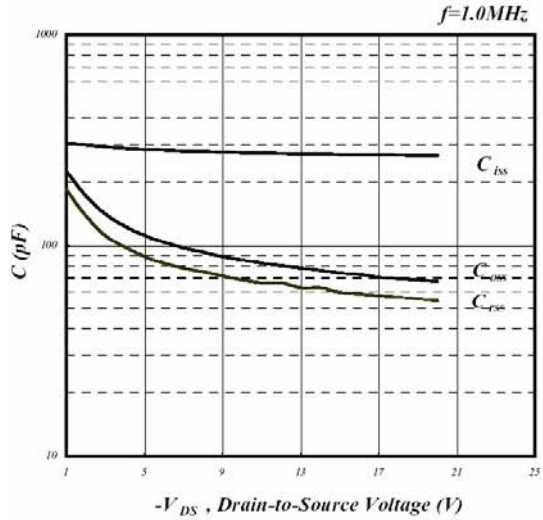


Fig 7. Gate Charge Characteristics



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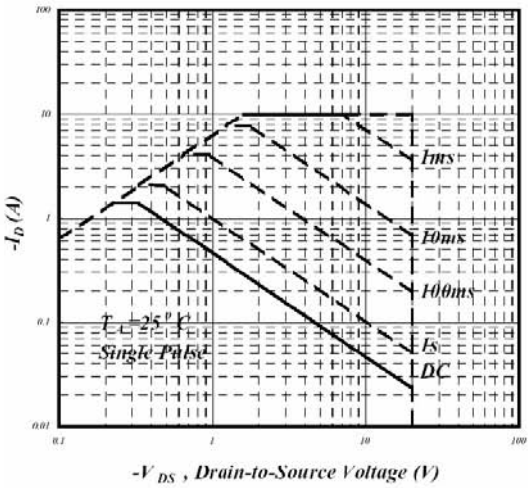

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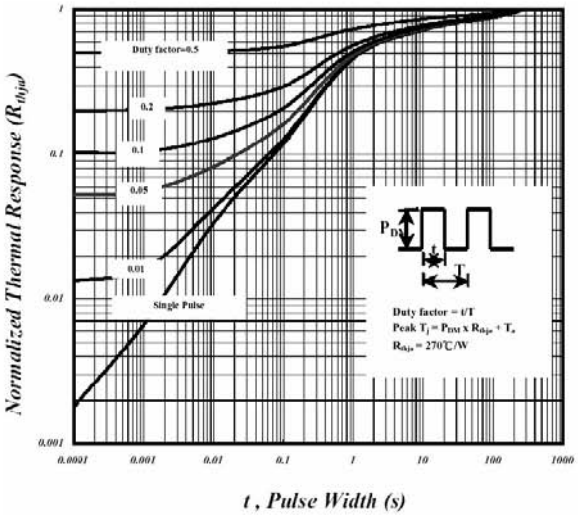


Fig 10. Effective Transient Thermal Impedance

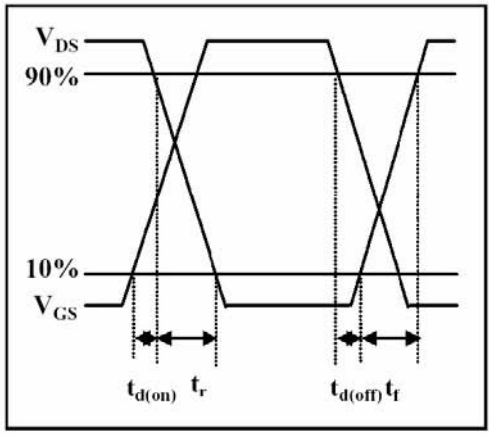


Fig 11. Transfer Characteristics

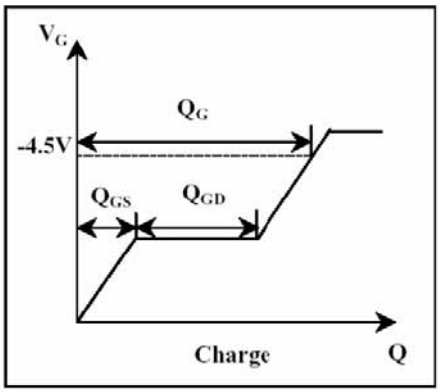
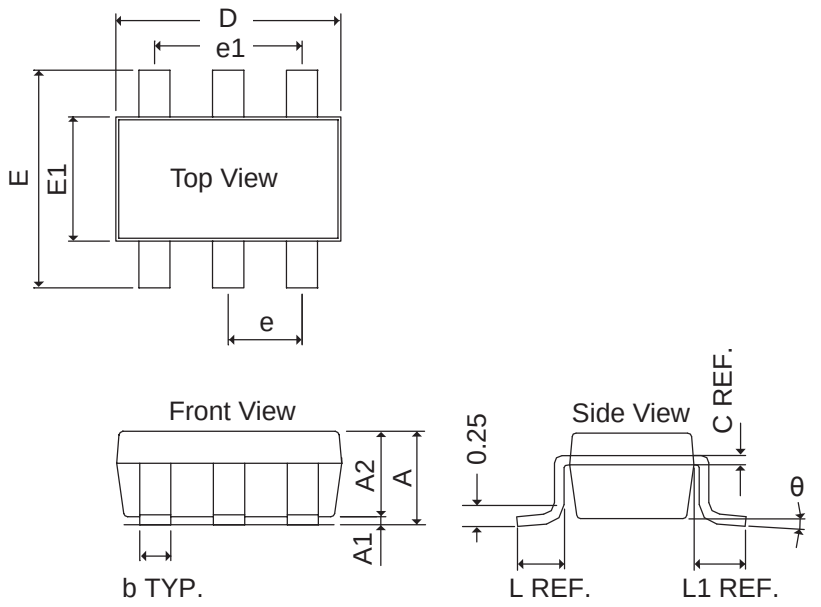


Fig 12. Gate Charge Waveform

TSOP-6 Outline Dimension

Unit:mm



TSOP-6		
Dim	**Min**	**Max**
A	-	1.10
A1	0	0.10
A2	0.70	1.00
C	0.12 REF.	
D	2.70	3.10
E	2.60	3.00
E1	1.40	1.80
L	0.45 REF.	
L1	0.60 REF.	
θ	0°	10°
b	0.30	0.50
e	0.95 REF.	
e1	1.90 REF.	