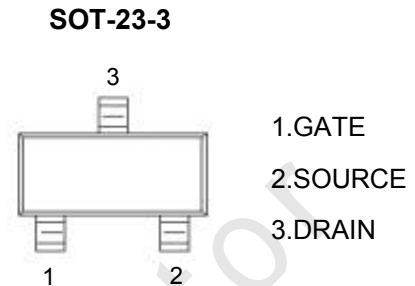


$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
20V	0.024Ω@10V	6.0A
	0.027Ω@4.5V	
	0.035Ω@2.5V	



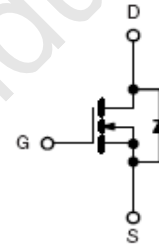
### General FEATURE

- TrenchFET Power MOSFET
- Lead free product is acquired
- Surface mount package

### APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

### Equivalent Circuit



### Maximum ratings ( $T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	±12	
Continuous Drain Current	$I_D$	6.0	A
Pulsed Drain Current*1	$I_{DM}$	20	
Continuous Source-Drain Diode Current	$I_S$	1.25	
Maximum Power Dissipation	$P_D$	1.25	W
Thermal Resistance from Junction to Ambient( $t \leq 10s$ )	$R_{\theta JA}$	100	$^{\circ}C/W$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{stg}$	-55 ~+150	

Note :

\*1. Pulse Width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$

**MOSFET ELECTRICAL CHARACTERISTICS**
**Ta = 25 °C unless otherwise specified**

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.8	1.0	
Gate-source leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 12V$			$\pm 100$	nA
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 16V, V_{GS} = 0V$			100	nA
Drain-source on-state resistance <sup>a</sup>	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 6A$		0.016	0.024	$\Omega$
		$V_{GS} = 4.5V, I_D = 5A$		0.019	0.027	
		$V_{GS} = 2.5V, I_D = 4A$		0.023	0.035	
Forward transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = 5V, I_D = 6A$		25	-	S
<b>Dynamic<sup>b</sup></b>						
Input capacitance	$C_{iss}$	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$		742		pF
Output capacitance	$C_{oss}$			66		
Reverse transfer capacitance	$C_{rss}$			78		
Total gate charge	$Q_g$	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 6A$		9.0		nC
Gate-source charge	$Q_{gs}$			1.5		
Gate-drain charge	$Q_{gd}$			2.6		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 10V, I_D = 1A$ $V_{GEN} = 4.5V, R_g = 6\Omega$		12.0		ns
Rise time	$t_r$			23.0		
Turn-off delay time	$t_{d(off)}$			14.0		
Fall time	$t_f$			9.0		
<b>Drain-source body diode characteristics</b>						
Continuous source-drain diode current	$I_S$	$T_C = 25^\circ C$			1.25	A
Body diode voltage	$V_{SD}$	$I_S = 1.0A$		0.7	1.0	V

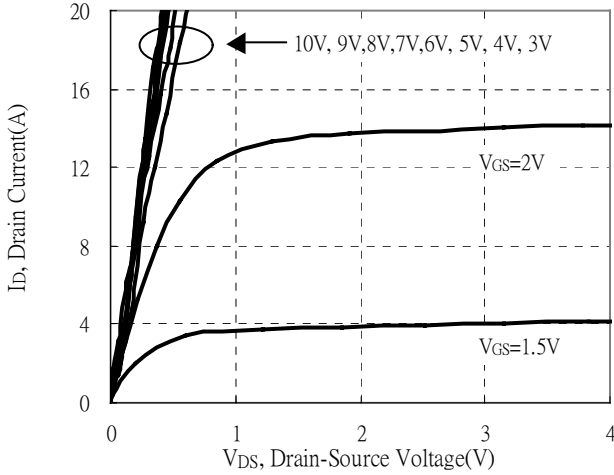
**Notes :**

 a. Pulse Test : Pulse Width < 300 $\mu$ s, Duty Cycle  $\leq$ 2%.

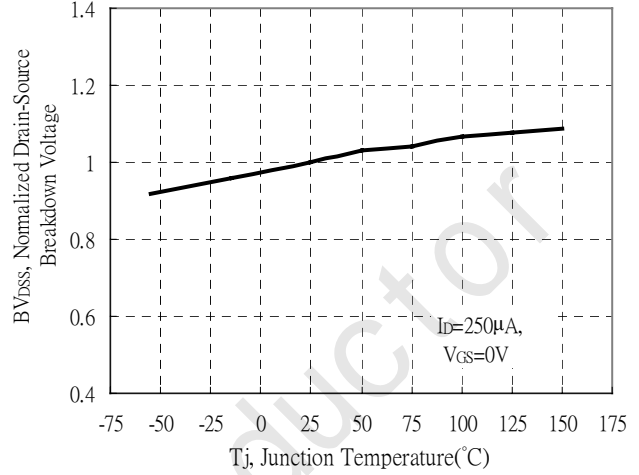
b. Guaranteed by design, not subject to production testing.

## Typical Characteristics

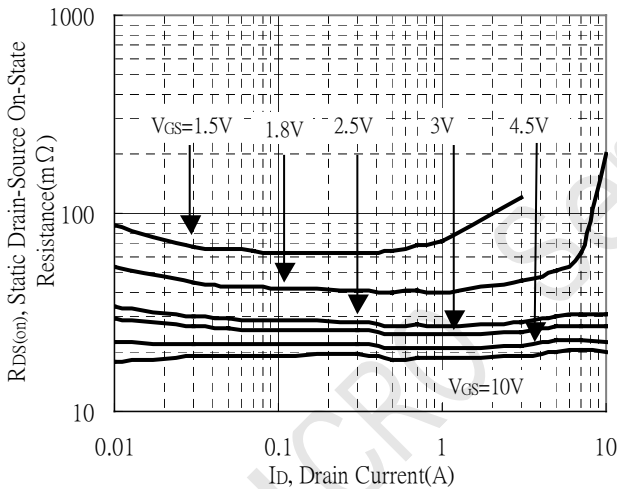
Typical Output Characteristics



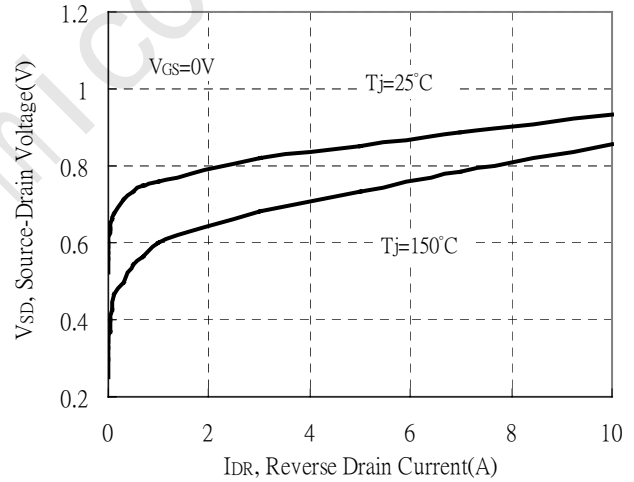
Breakdown Voltage vs Ambient Temperature



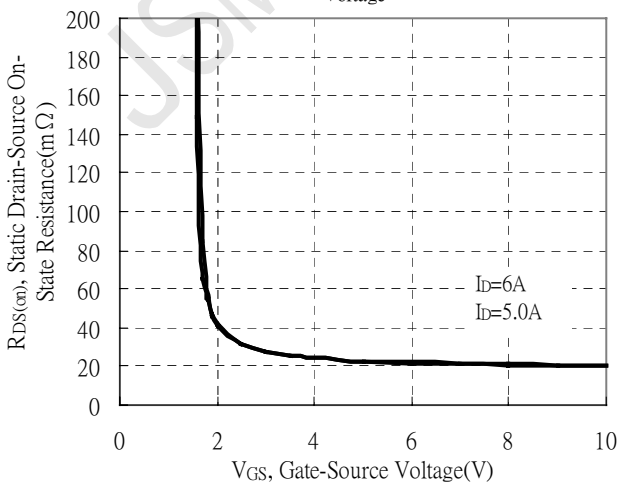
Static Drain-Source On-State resistance vs Drain Current



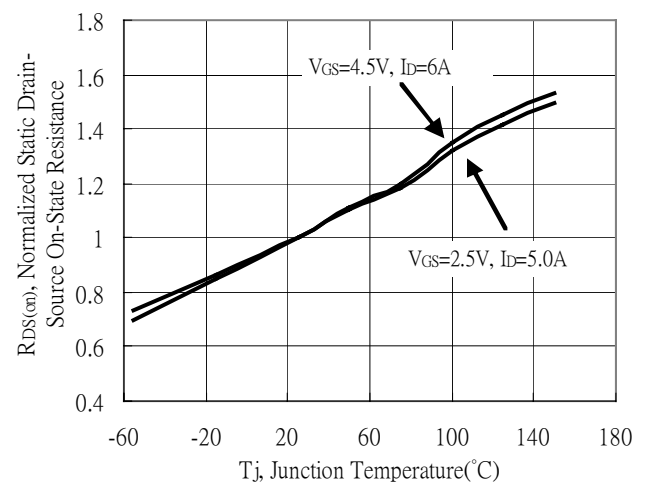
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

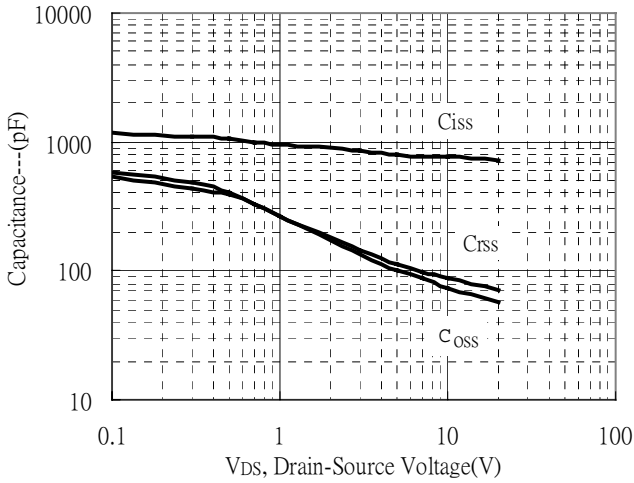


Drain-Source On-State Resistance vs Junction Temperature

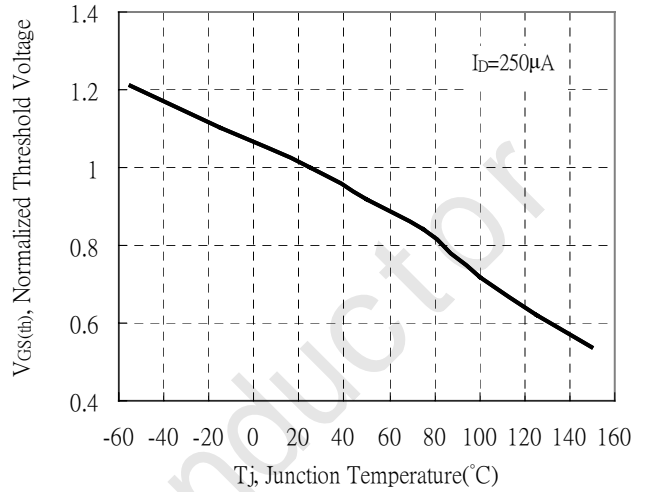


**Typical Characteristics(Cont.)**

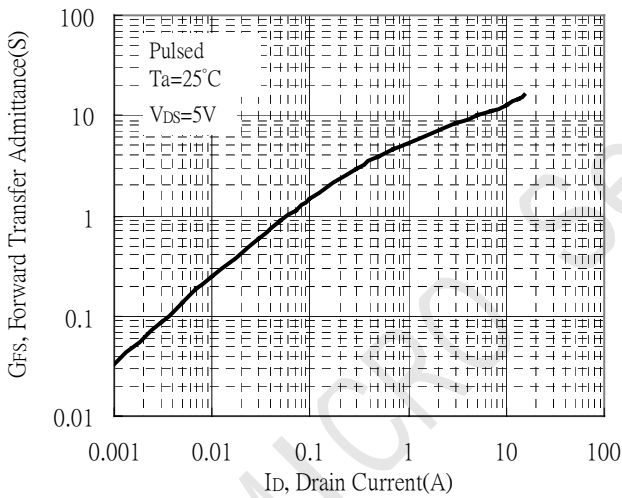
Capacitance vs Drain-to-Source Voltage



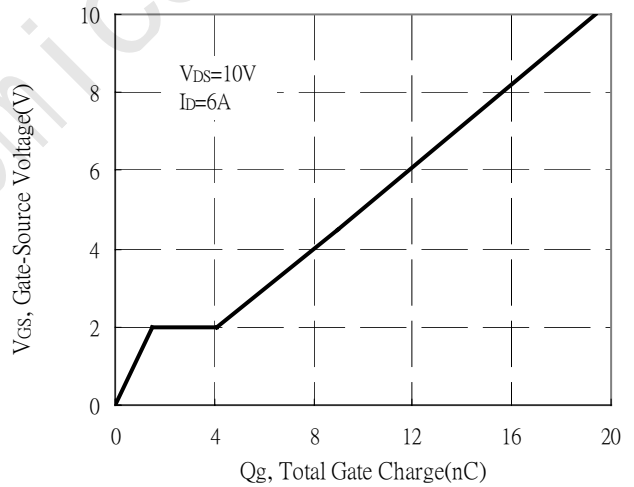
Threshold Voltage vs Junction Temperature



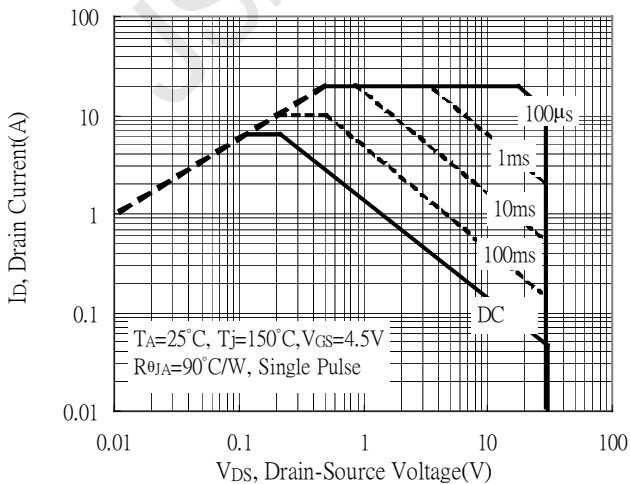
Forward Transfer Admittance vs Drain Current



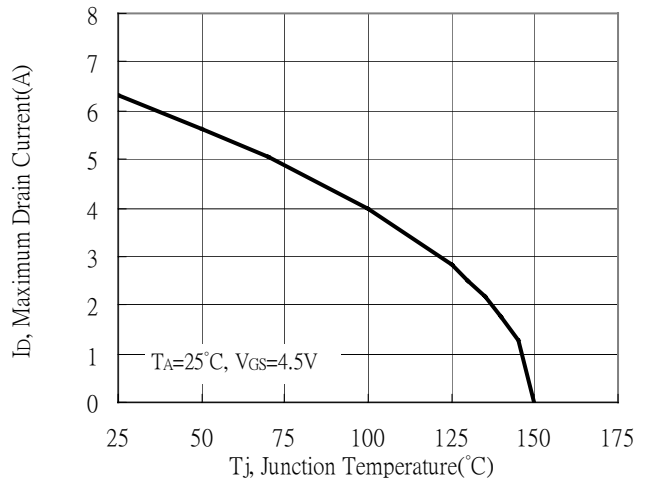
Gate Charge Characteristics



Maximum Safe Operating Area

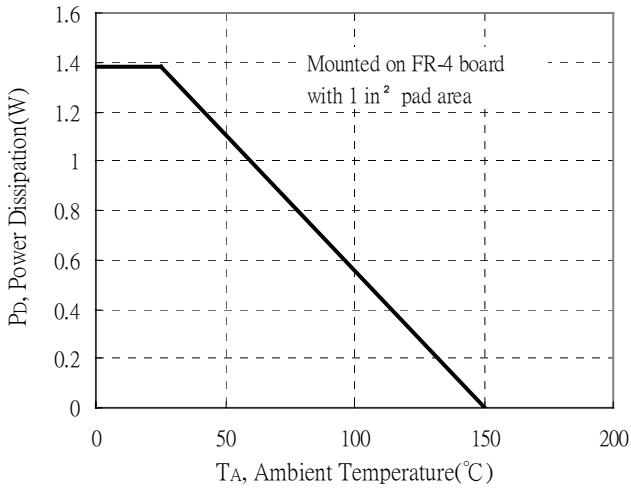
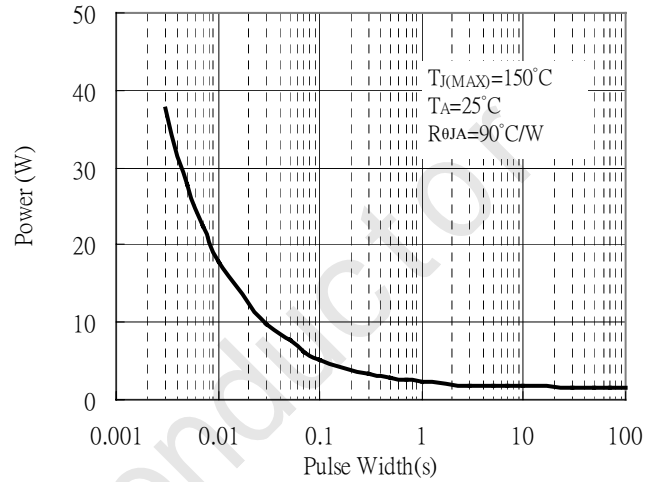


Maximum Drain Current vs Junction Temperature

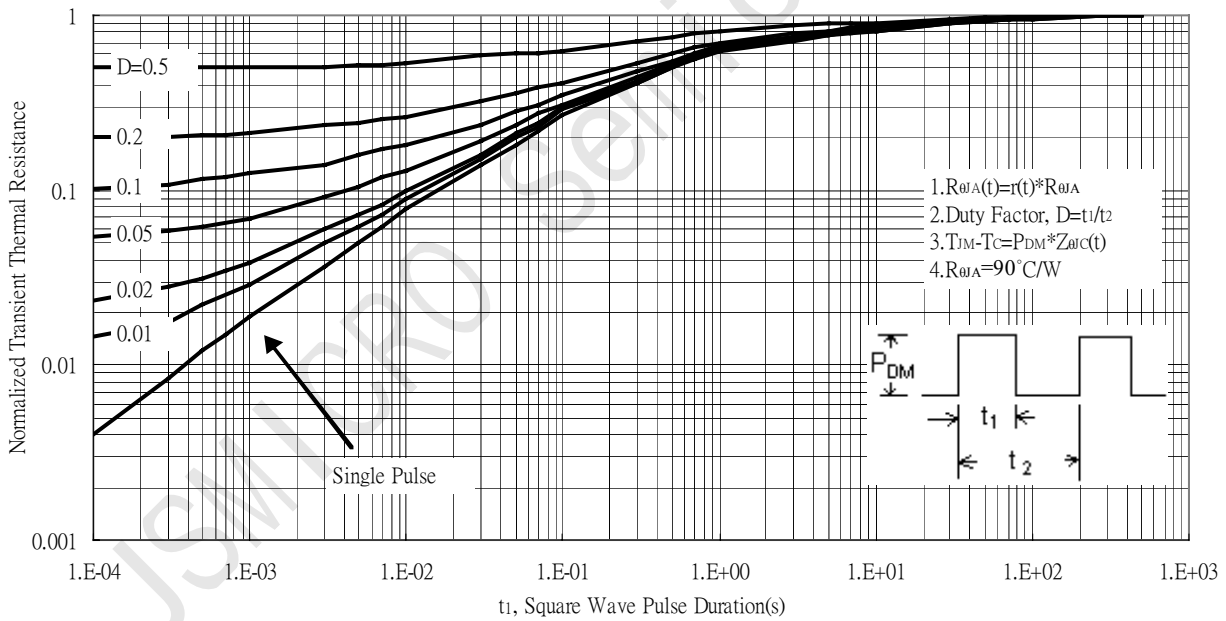


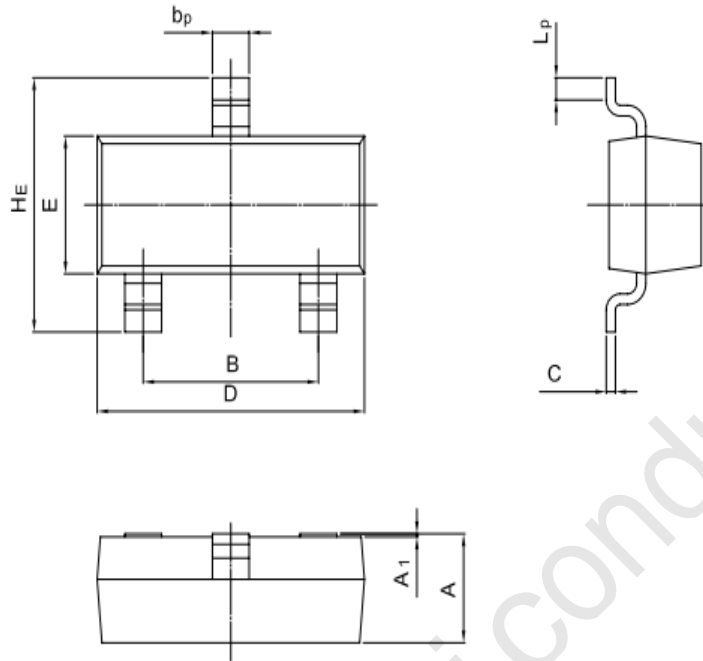
**Typical Characteristics(Cont.)**

Power Derating Curve

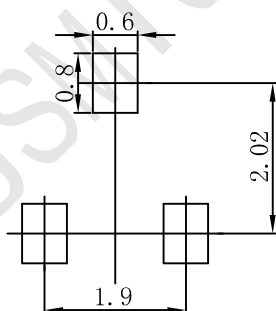

 Single Pulse Power Rating, Junction to Ambient  
 (Note on page 1)


Transient Thermal Response Curves



**SOT-23 Package Outline Dimensions**


UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20

**SOT-23 Suggested Pad Layout**

**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.