ACE1357B

P-Channel Enhancement Mode Field Effect Transistor

Description

These P-Channel enhancement mode field effect transistors are produced using high cell density, DMOS technology.

Features

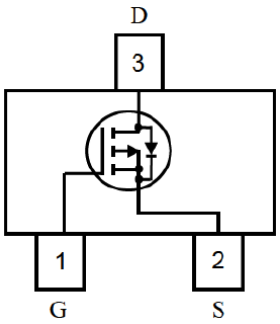
- V_{DS} (V) = -20V,I_D = -2A (V_{GS}=-4.5V)
- $R_{DS(ON)}$<120mΩ @ V_{GS}= -4.5V
- $R_{DS(ON)}$<150mΩ @ V_{GS}= -2.5V
- TSOT-23-3 Package

Absolute Maximum Ratings

Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current (Continuous)	T_A=25℃	I_D	-2	A
	T_A=70℃		-1.8	
Drain Current (Pulsed)		I_{DM}	-7	A
Power Dissipation	T_A=25℃	P_D	1	W
Operating temperature / storage temperature		T_J/T_{STG}	-55~150	℃

Packaging Type

TSOT-23-3



Ordering information

ACE1357B XXX + H

- Halogen - free
- Pb - free
- BMS: TSOT-23-3

Electrical Characteristics

T_A=25℃, unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	μA
Gate threshold voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_{DS}=-250μA	-0.4	-0.65	-0.9	V
Gate leakage current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V			±100	nA
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-2A		88	120	mΩ
		V_{GS}=-2.5V, I_D=-1A		120	150	
Forward trans conductance	g_{FS}	V_{DS}=-5V, I_D=-2.8A		6.5		S
Diode forward voltage	V_{SD}	I_{SD}=-1.6A, V_{GS}=0V		-0.86	-1.1	V
Max Diode Forward Voltage	I_S				-1.6	A
Switching						
Total gate charge	Qg	V_{GS}=-4.5V, V_{DS}=-6V, I_D=-2.8A		4.9		nC
Gate-source charge	Qgs			0.62		
Gate-drain charge	Qgd			1.07		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-6V, RL=6Ω,I_D =-1A, V_{GEN} = -4.5V R_G = 6Ω		10.1		ns
Turn-on rise time	Tr			4.76		
Turn-off delay time	$t_{d(off)}$			84.1		
Turn-off fall time	Tf			25.2		
Dynamic						
Input capacitance	Ciss	V_{GS}=0V, V_{DS}=-6V, f=1.0MHz		472		pF
Output capacitance	Coss			71		
Reverse transfer capacitance	Crss			51		

Notes:

1. Pulse width limited by maximum junction temperature.
2. Pulse test: PW≤300μ s, duty cycle≤2%.
3. For design AID only, not subject to production testing.
4. Switching time is essentially independent of operating temperature.

Typical Performance Characteristics

Fig.1 Output Characteristic

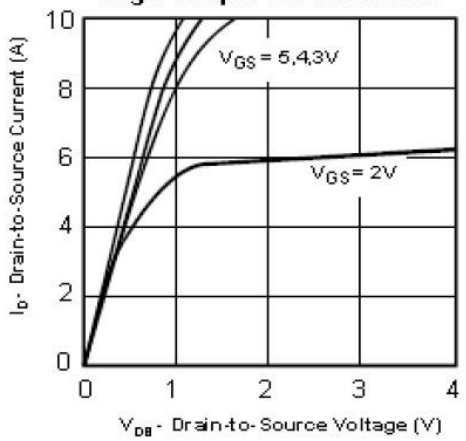


Fig.2 Transfer Characteristics

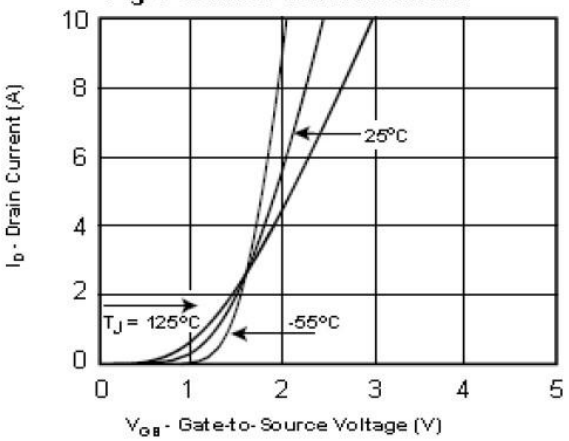


Fig.3 On-Resistance Variation with Temperature

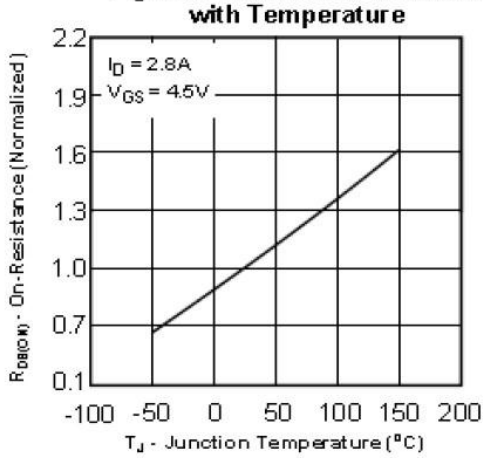


Fig.4 Body Diode Forward Voltage Variation with Source Current

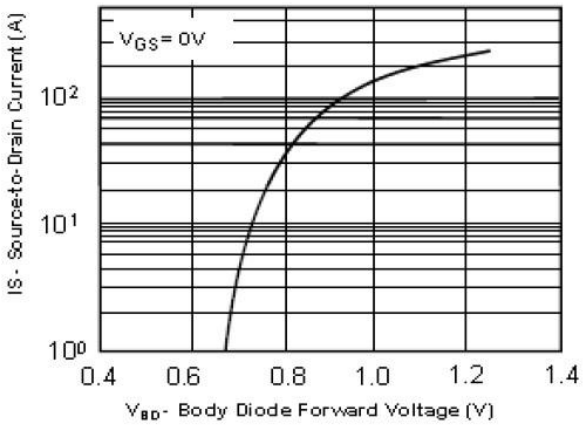


Fig.5 Gate Threshold Variation with Temperature

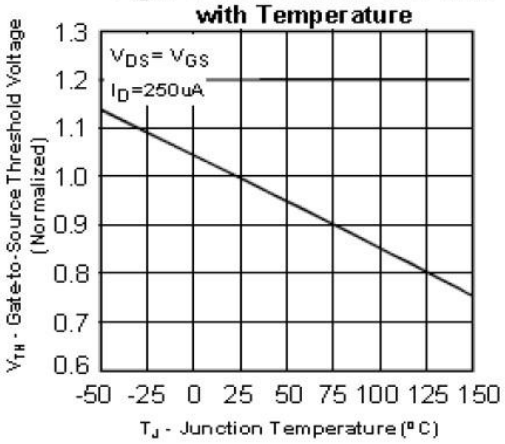


Fig.6 Capacitance

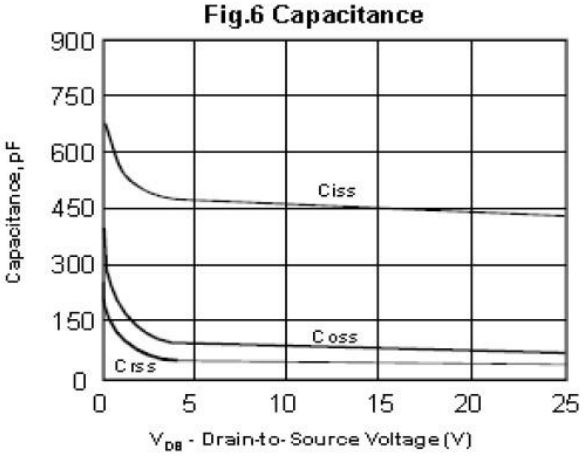


Fig. 7 Gate Charge Waveform

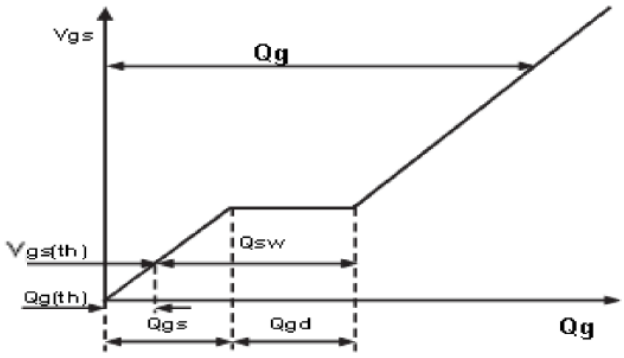


Fig. 8 Gate Charge

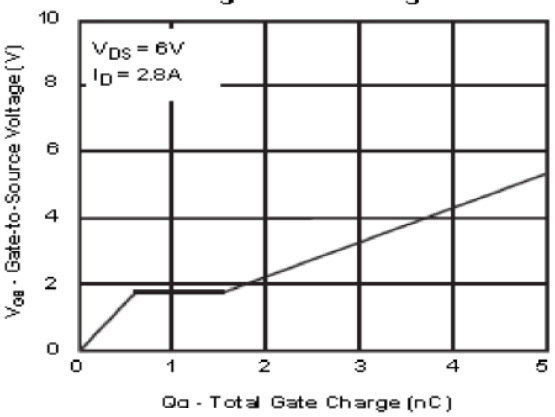


Fig. 9 Maximum Safe Operating Area

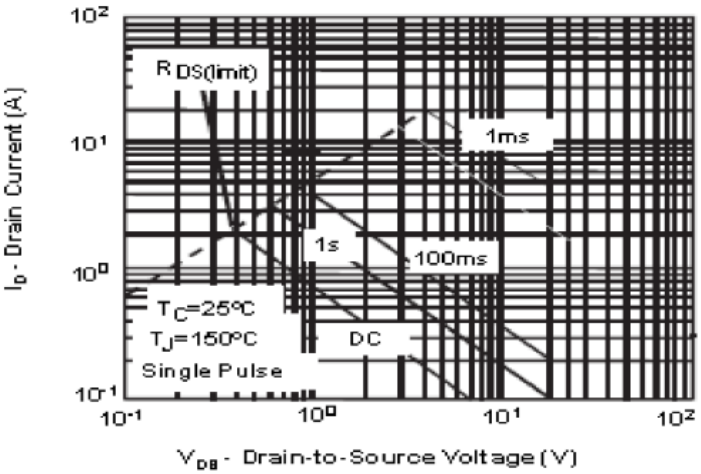
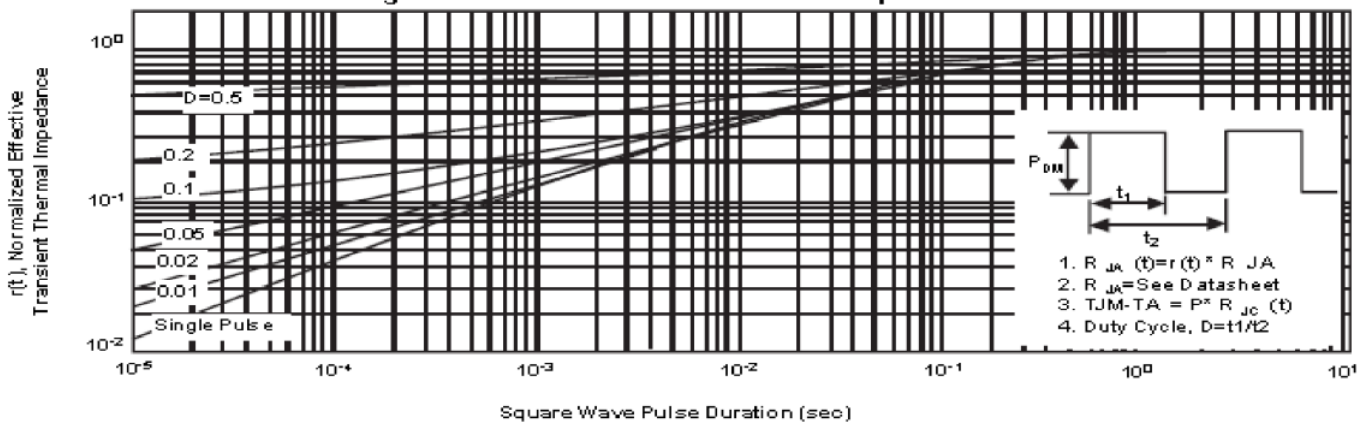
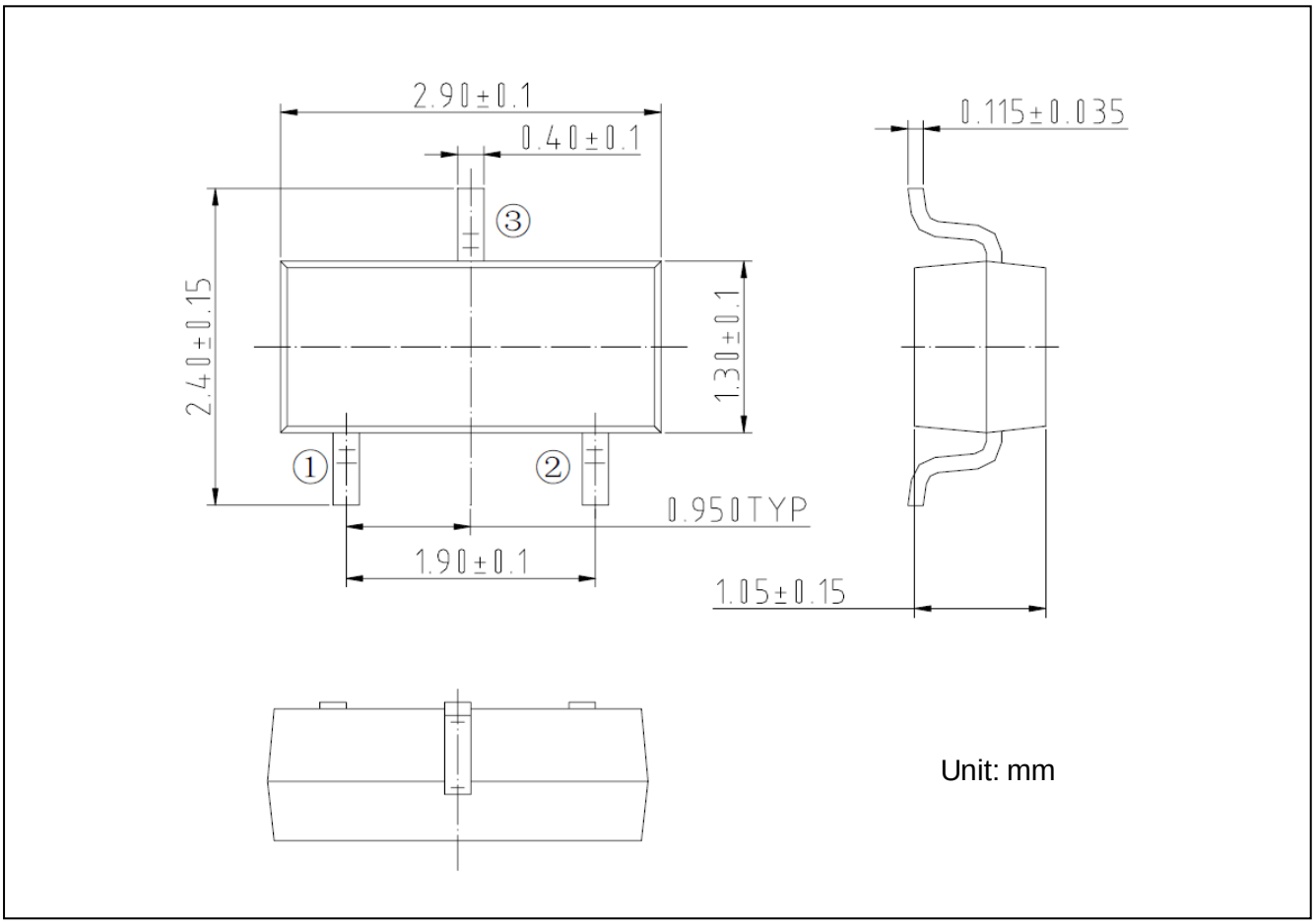


Fig. 10 Normalized Thermal Transient Impedance Curve



Packing Information

TSOT-23-3



Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and shoes failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.