-60V P-Channel Trench MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-60V	3Ω@-10V	-0.13A
	3.5Ω@-4.5V	

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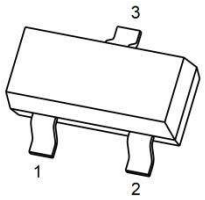
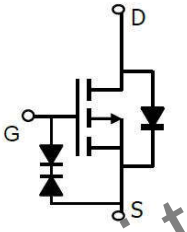
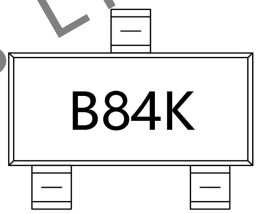


PIN1:GATE
PIN2:SOURCE
PIN3:DRAIN

Schematic diagram



Marking



Features

- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired

Applications

- Load Switch
- PWM Applications
- Power Management

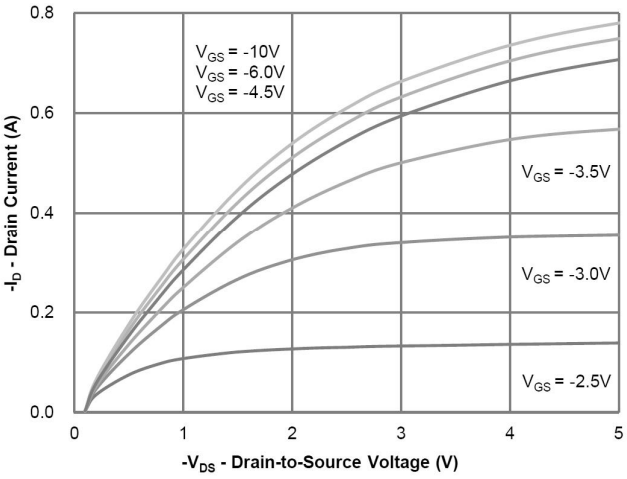
Absolute Maximum rating（T_A = 25℃ unless otherwise noted）

Parameter		Symbol	Value	Units
Drain - Source Voltage		V_{DS}	-60	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1,5]	T_A = 25℃	I_D	-0.13	A
Pulsed Drain Current [2]		I_{DM}	-1.2	A
Power Dissipation [4,5]		P_D	0.35	W
Thermal Resistance from Junction to Ambient [5]		$R_{\theta JA}$	357	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

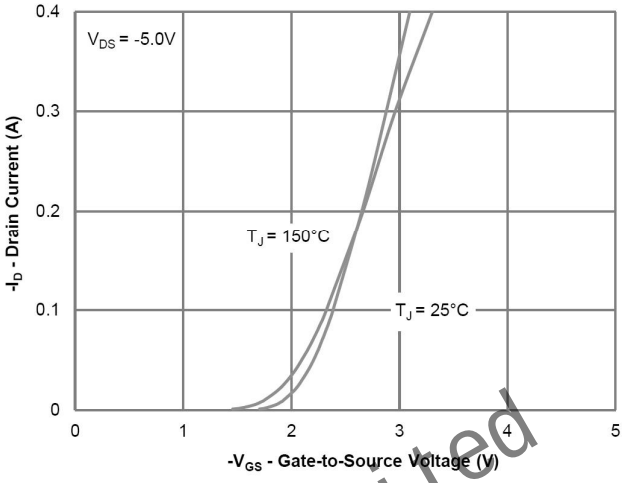
Electrical Characteristics（T_A = 25℃ unless otherwise noted）

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D= -250μA	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -60V, V_{GS}= 0V			-1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}= 0V			±10	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D= -250μA	-1	-1.6	-2.5	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS}= -10V, I_D= -0.2A		3	5	Ω
		V_{GS}= -4.5V, I_D= -0.1A		3.5	6	
Forward Transconductance	g_{FS}	V_{DS}= -5V, I_D= -0.2A		0.35		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}= -30V, V_{GS}=0V, F= 1.0MHz		29		pF
Output Capacitance	C_{oss}			10		
Reverse Transfer Capacitance	C_{rss}			5		
Gate resistance	R_g	V_{GS}= 0V, V_{DS}= 0V, f= 1.0MHz		10		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}= -30V, I_D= -0.2A, V_{GS}= -10V		0.9		nC
Gate-source Charge	Q_{gs}			0.25		
Gate-drain Charge	Q_{gd}			0.08		
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= -30V, V_{GS}= -10V, I_D= -0.2A,R_{GEN}= 3Ω,		3.7		ns
Turn-on Rise Time	t_r			2.5		
Turn-off Delay Time	$t_{d(off)}$			22		
Turn-off Fall Time	t_f			18		
Source - Drain Diode Characteristics						
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS}= 0V, I_{SD}= -1.5A,T_J= 25℃			-1.2	V

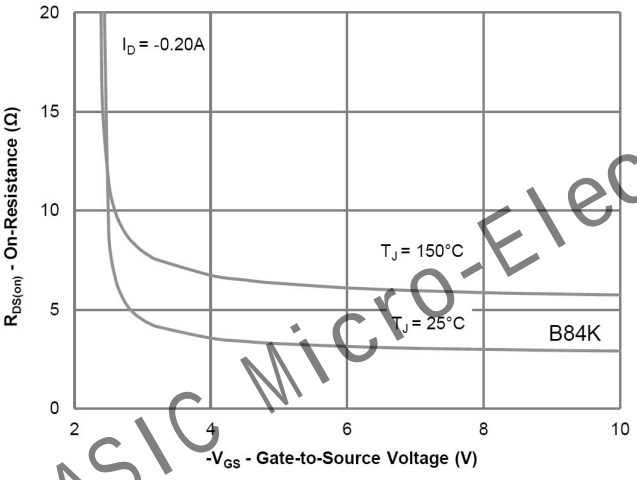
Typical Characteristic



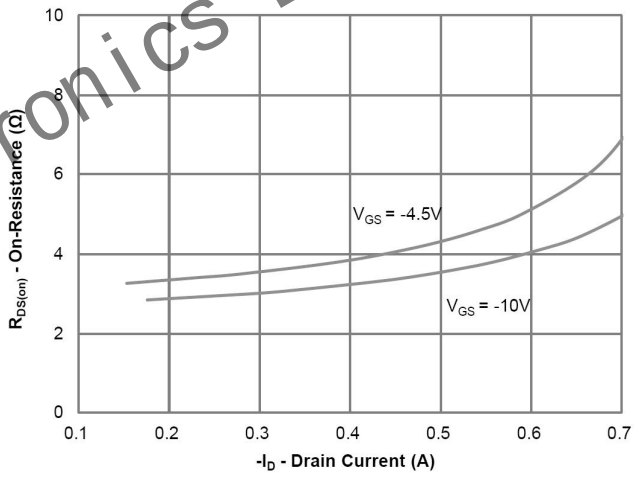
Output Characteristics



Transfer Characteristics



On-Resistance vs. Gate-Source Voltage



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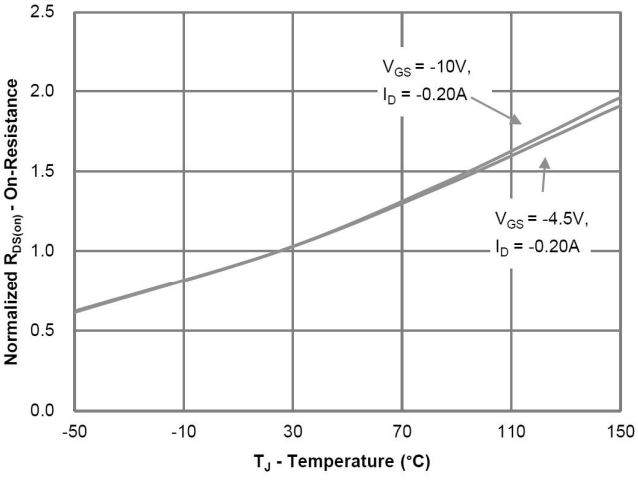
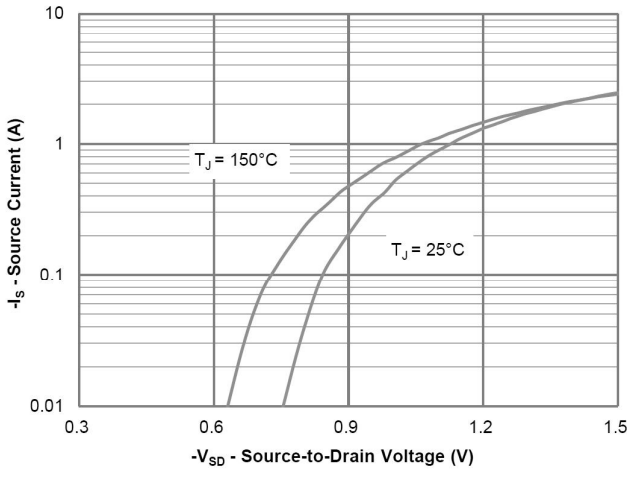
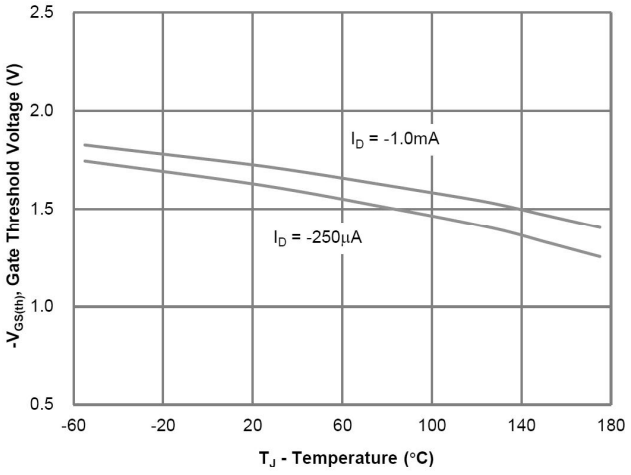


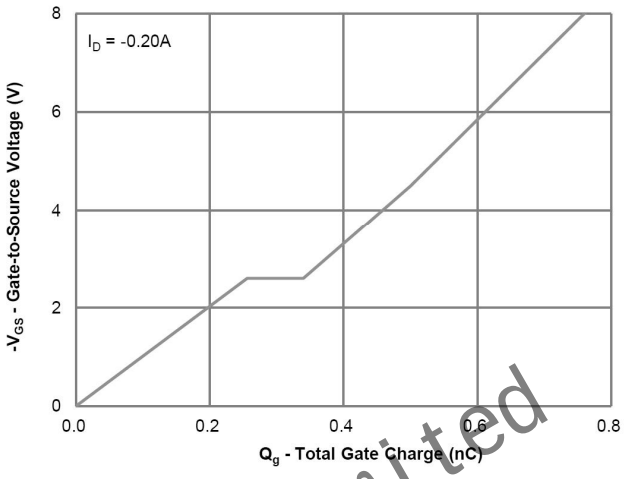
On-Resistance vs. Junction Temperature



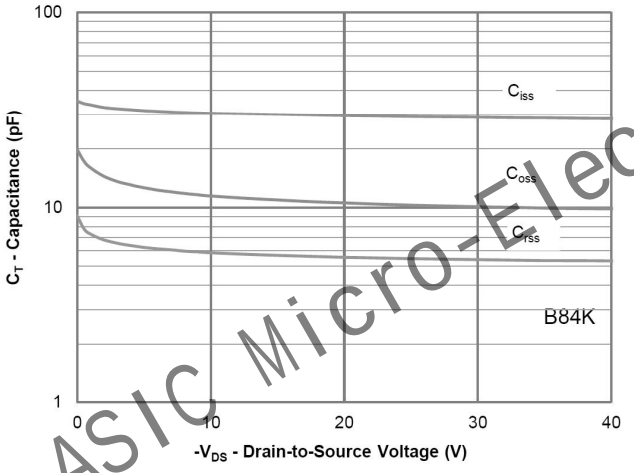
Source-Drain Diode Forward Voltage



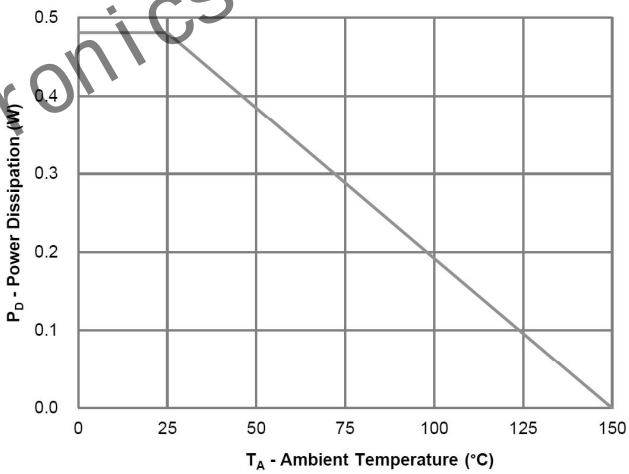
Gate Threshold Variation vs. Junction Temperature



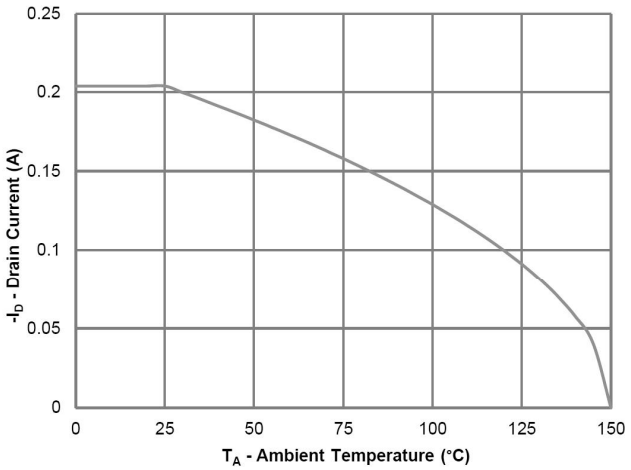
Gate Charge Characteristics



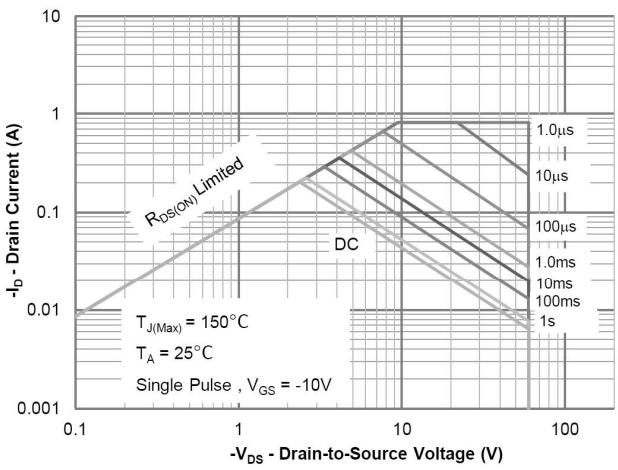
Capacitance Characteristics



Power Derating



Current Derating



Safe Operating Area

Dimension

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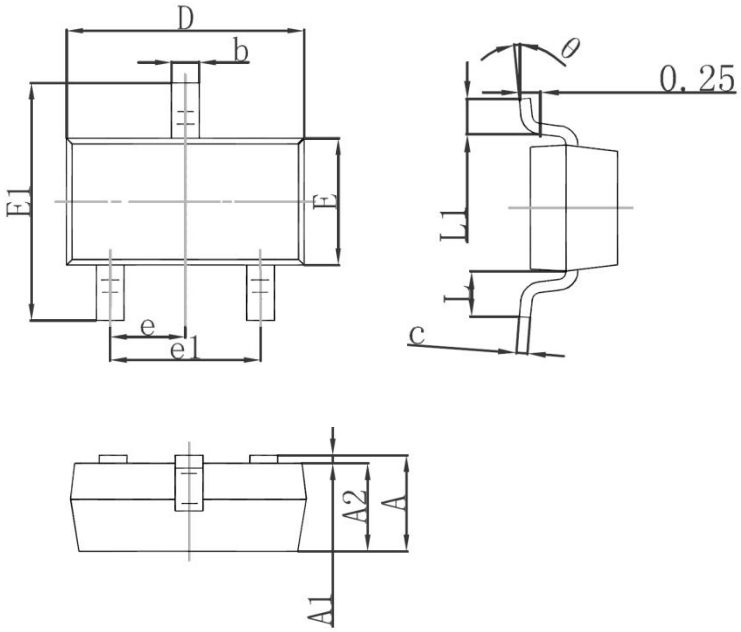
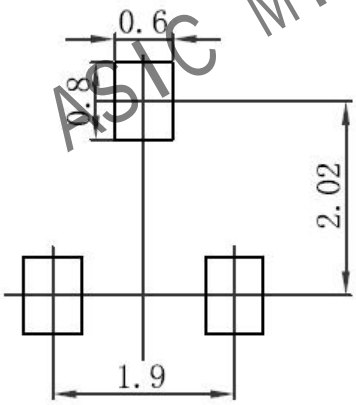


Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Recommended Land Pattern



Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference only
4. Unit: mm