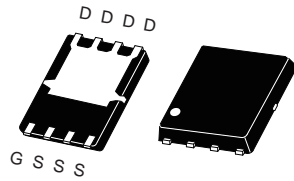
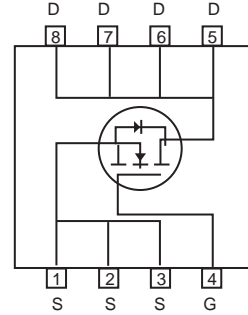


### FEATURES

- 30V, 85A,  $R_{DS(ON)} = 4.0m\Omega$  @ $V_{GS} = 10V$ .  
 $R_{DS(ON)} = 6.0m\Omega$  @ $V_{GS} = 4.5V$ .
- Super high dense cell design for extremely low  $R_{DS(ON)}$ .
- High power and current handling capability.
- Lead free product is acquired.
- Surface mount Package.



PR-PACK (5\*6)



### ABSOLUTE MAXIMUM RATINGS $T_A = 25^\circ C$ unless otherwise noted

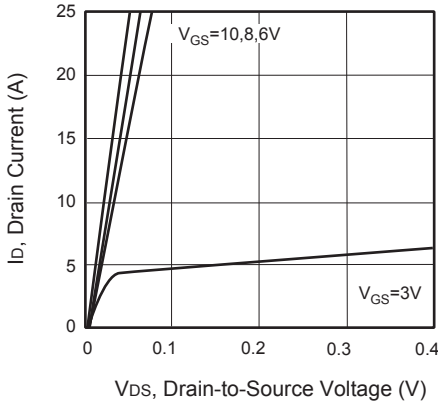
Parameter	Symbol	Limit	Units
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	85	A
Drain Current-Pulsed <sup>a</sup>	$I_{DM}$	340	A
Maximum Power Dissipation	$P_D$	48	W
Single Pulsed Avalanche Energy <sup>e</sup>	$E_{AS}$	125	mJ
Single Pulsed Avalanche Current <sup>e</sup>	$I_{AS}$	50	A
Operating and Store Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ C$

### Thermal Characteristics

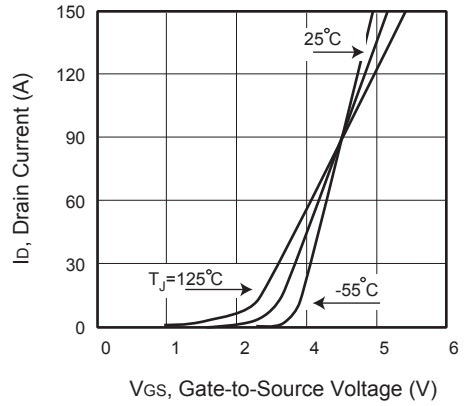
Parameter	Symbol	Limit	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.6	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient <sup>b</sup>	$R_{\theta JA}$	20	$^\circ C/W$

## Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

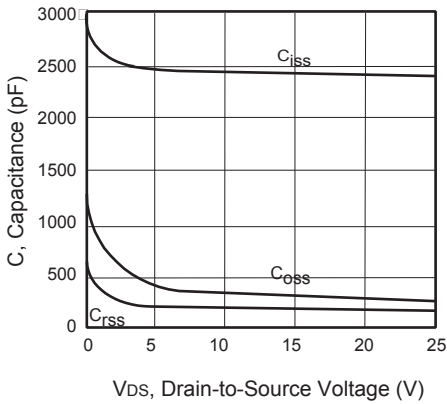
Parameter	Symbol	Test Condition	Min	Typ	Max	Units	
<b>Off Characteristics</b>							
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1	$\mu A$	
Gate Body Leakage Current, Forward	$I_{GSSF}$	$V_{GS} = 20V, V_{DS} = 0V$			100	nA	
Gate Body Leakage Current, Reverse	$I_{GSSR}$	$V_{GS} = -20V, V_{DS} = 0V$			-100	nA	
<b>On Characteristics <sup>c</sup></b>							
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	1		3	V	
Static Drain-Source	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 18A$		3.0	4.0	m $\Omega$	
On-Resistance		$V_{GS} = 4.5V, I_D = 15A$		4.0	6.0	m $\Omega$	
Gate input resistance	$R_g$	f=1MHz, open Drain		1.8		$\Omega$	
<b>Dynamic Characteristics <sup>d</sup></b>							
Input Capacitance	$C_{iss}$	$V_{DS} = 15V, V_{GS} = 0V, f = 1.0\text{ MHz}$		2470		pF	
Output Capacitance	$C_{oss}$				325		pF
Reverse Transfer Capacitance	$C_{rss}$				185		pF
<b>Switching Characteristics <sup>d</sup></b>							
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15V, I_D = 10A, V_{GS} = 10V, R_{GEN} = 1\Omega$		26	52	ns	
Turn-On Rise Time	$t_r$			14	28	ns	
Turn-Off Delay Time	$t_{d(off)}$			67	134	ns	
Turn-Off Fall Time	$t_f$			9	18	ns	
Total Gate Charge	$Q_g$	$V_{DS} = 15V, I_D = 10A, V_{GS} = 10V$		63	82	nC	
Gate-Source Charge	$Q_{gs}$			8		nC	
Gate-Drain Charge	$Q_{gd}$			15		nC	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>							
Drain-Source Diode Forward Current <sup>b</sup>	$I_S$				85	A	
Drain-Source Diode Forward Voltage <sup>c</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = 18A$			1.2	V	
<b>Notes :</b> <input type="checkbox"/> a.Repetitive Rating : Pulse width limited by maximum junction temperature. <input type="checkbox"/> b.Surface Mounted on FR4 Board, $t \leq 10\text{ sec}$ . <input type="checkbox"/> c.Pulse Test : Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 2\%$ . <input type="checkbox"/> d.Guaranteed by design, not subject to production testing. <input type="checkbox"/> e.L = 0.1mH, $I_{AS} = 50A, V_{DD} = 24V, R_G = 25\Omega$ , Starting $T_J = 25\text{ C}$							



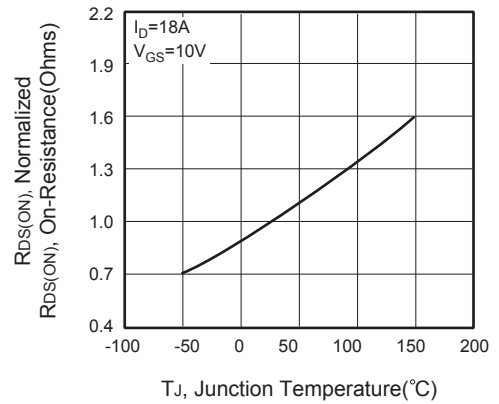
**Figure 1. Output Characteristics**



**Figure 2. Transfer Characteristics**



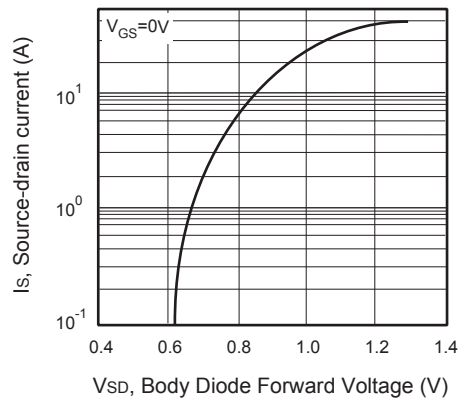
**Figure 3. Capacitance**



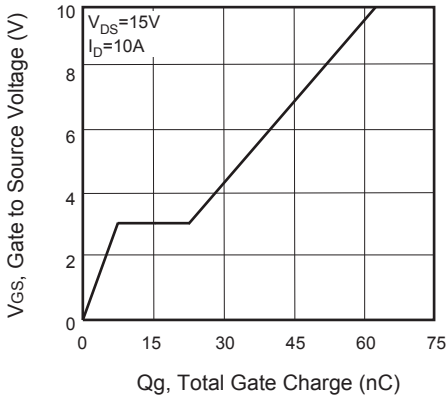
**Figure 4. On-Resistance Variation with Temperature**



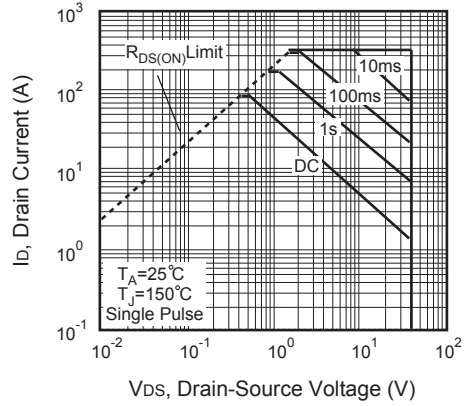
**Figure 5. Gate Threshold Variation with Temperature**



**Figure 6. Body Diode Forward Voltage Variation with Source Current**



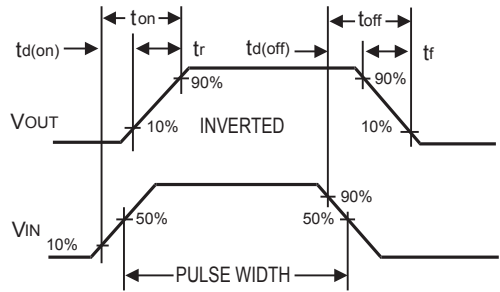
**Figure 7. Gate Charge**



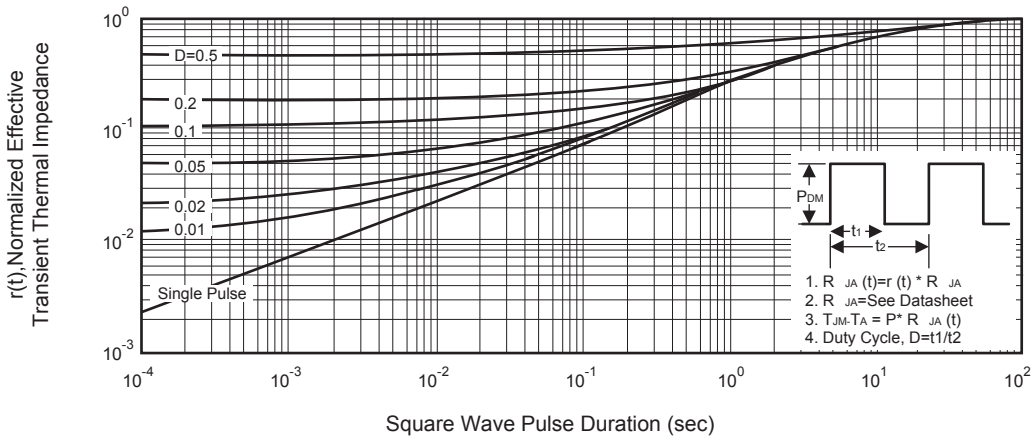
**Figure 8. Maximum Safe Operating Area**



**Figure 9. Switching Test Circuit**



**Figure 10. Switching Waveforms**



**Figure 11. Normalized Thermal Transient Impedance Curve**